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Dionex ICS-5000^{+} Ion Chromatography System Installation Instructions

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Software versions: Chromeleon 7.1 SR2 (or later) or Chromeleon 6.8 SR12 (or later) for a system including a standard DC; Chromeleon 7.2 SR2 (or later) for a system including a low-temperature DC

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

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1 • Introduction

1.1 Overview

The modular design of the Thermo Scientific Dionex™ ICS-5000+ Ion Chromatography System lets you configure and customize components for a wide range of applications. This manual provides instructions for initial installation of the components that make up typical ion chromatography (IC) systems and Reagent-Free™ IC (RFIC™) systems with eluent generation (RFIC-EG™). Configurations for both capillary IC and analytical IC applications are described. Analytical IC applications can be configured with either standard bore or microbore plumbing.

Installation instructions for the following Thermo Scientific modules and components are included:

- Dionex ICS-5000+ Dual Pump (DP)
- Dionex ICS-5000+ Single Pump (SP)
- Dionex ICS-5000+ Eluent Generator (EG)
- Dionex ICS-5000+ Detector/Chromatography Module (DC)
- Dionex ICS-5000+ Conductivity Detector (CD)
- Dionex ICS-5000+ Electrochemical Detector (ED)
- Dionex ICS-5000+ IC Cube™ (IC Cube)
- Dionex ICS-5000+ Automation Manager (AM)
- Dionex ICS-5000+ Thermal Compartment (TC)
- Dionex ICS Series AS-AP Autosampler
- Dionex AS-DV Autosampler

1.2 Related Documentation

In addition to this manual, the following documents are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

- *Dionex ICS-5000+ Ion Chromatography System Operator's Manual* (Document No. 065447)
- *Dionex ICS Series Photodiode Array Detector Operator's Manual* (Document No. 065147)
- *Dionex ICS Series Variable Wavelength Detector Operator's Manual* (Document No. 065141)
- *Dionex AS-AP Autosampler Operator's Manual* (Document No. 065361)
- *Dionex AS-DV Autosampler Operator's Manual* (Document No. 065259)
- Manuals for consumable products (columns, suppressors, CR-TC, EGC, CRD)
- *Chromeleon 7 Installation Guide* (Document No. 7229.0003)
- *Installing Chromeleon 6.8 with a Dionex Ion Chromatograph* (Document No. 031883)

1.3 Safety Messages and Notes

This manual contains warnings and precautionary statements that can prevent personal injury and/or damage to the system when properly followed. Safety messages appear in bold type and are accompanied by icons, as shown below.

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT **Indicates that the function or process of the instrument may be impaired. Operation does not constitute a hazard.**

Messages d'avertissement en français

Signale une situation de danger immédiat qui, si elle n'est pas évitée, entraînera des blessures graves à mortelles.

Signale une situation de danger potentiel qui, si elle n'est pas évitée, pourrait entraîner des blessures graves à mortelles.

Signale une situation de danger potentiel qui, si elle n'est pas évitée, pourrait entraîner des blessures mineures à modérées. Également utilisé pour signaler une situation ou une pratique qui pourrait gravement endommager l'instrument mais qui n'entraînera pas de blessures.

Warnhinweise in Deutsch

Bedeutet unmittelbare Gefahr. Mißachtung kann zum Tod oder schwerwiegenden Verletzungen führen.

Bedeutet eine mögliche Gefährdung. Mißachtung kann zum Tod oder schwerwiegenden Verletzungen führen.

Bedeutet eine mögliche Gefährdung. Mißachtung kann zu kleineren oder mittelschweren Verletzungen führen. Wird auch verwendet, wenn eine Situation zu schweren Schäden am Gerät führen kann, jedoch keine Verletzungsgefahr besteht.

Notes

Informational messages also appear throughout the manual. These are labeled NOTE and are in bold type:

NOTE NOTES call attention to certain information. They alert you to an unexpected result of an action, suggest how to optimize instrument performance, etc.

Capillary IC Sections preceded by the Capillary IC flag contain information that applies to capillary IC systems only.

Analytical IC Sections preceded by the Analytical IC flag contain information that applies to analytical IC systems only.

If a section is not flagged, the information in the section applies to both capillary IC and analytical IC systems.

1.4 Facility Requirements

- Make sure the Dionex ICS-5000+ system installation site meets the power and environmental specifications for each module. Refer to Appendix A of *Dionex ICS-5000+ Ion Chromatography System Operator's Manual* (Document No. 065446) for specifications. The manual is provided on the Thermo Scientific Reference Library DVD (P/N 053891).
- Make sure the installation site has enough power outlets for all system components.
- Provide a sturdy, vibration-free lab bench of a height that ensures convenient access to the interior of each Dionex ICS-5000+ module.
- Allow at least 6 cm (2.4 in) of clearance behind and at least 2.5 cm (1 in) to the sides of the system for power connections and ventilation.
- Provide a suitable waste container or drain system for system waste and sample waste.

- For 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 1-1.

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	

Table 1-1. *ASTM Filtered, Type I Deionized Water Specifications for Ion Chromatography*

- (Optional) If eluent reservoirs will be pressurized, provide a clean helium or nitrogen source regulated to approximately 0.17 to 0.34 MPa (25 to 50 psi).

Never pressurize eluent reservoirs above 0.07 MPa (10 psi). Pressurizing reservoirs above this limit can cause the reservoir to explode.

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

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

- (Optional) For pressurized reagent delivery, provide a clean helium or nitrogen source regulated to between 0.60 and 0.85 MPa (80 and 120 psi).

1.5 Configurations

The table below describes some common Dionex ICS-5000+ system configurations.

System Configuration	Typical Modules and Components Included
Single-Analysis Capillary IC or RFIC-EG System with Conductivity Detector	• SP • DC with one IC Cube, including an injection valve, and capillary versions of the following: EG degasser, suppressor, and Thermo Scientific Dionex Carbonate Removal Device (CRD) (an option for anion analyses) • Capillary CD • Capillary column set • Dionex AS-AP • **For RFIC-EG:** EG with one capillary Thermo Scientific Dionex EGC (Dionex EGC) and one capillary Thermo Scientific Dionex Continuously Regenerated Trap Column (Dionex CR-TC)
Single-Analysis Capillary IC or RFIC-EG System with Electrochemical Detector	• SP • DC with one IC Cube, including an injection valve and a capillary EG degasser • Capillary ED • Capillary column set • Dionex AS-AP • **For RFIC-EG:** EG with one capillary Dionex EGC and one capillary Dionex CR-TC
Single-Analysis Analytical IC or RFIC-EG System with Conductivity Detector	• SP • DC with one injection valve, one analytical column set, and one analytical suppressor • Analytical CD • Dionex AS-AP • **For RFIC-EG:** EG with one analytical Dionex EGC, one analytical Dionex CR-TC, and one Thermo Scientific Dionex RFIC+ Eluent Degasser

System Configuration	Typical Modules and Components Included
Single-Analysis Analytical IC or RFIC-EG System with Electrochemical Detector	• SP • DC with one injection valve and one analytical column set • Analytical ED • Dionex AS-AP • **For RFIC-EG:** EG with one analytical Dionex EGC, one analytical Dionex CR-TC, and one Dionex RFIC^{+} Eluent Degasser
Single-Analysis Analytical IC or RFIC-EG System with Variable Wavelength Detector, Photodiode Array Detector, or Mass Spectrometer	• SP • TC with one injection valve and one analytical column set • One detector: Thermo Scientific Dionex ICS Series Variable Wavelength Detector (Dionex VWD), Thermo Scientific Dionex ICS Series Photodiode Array Detector (Dionex PDA), or Thermo Scientific MSQ™ Mass Spectrometer • Dionex AS-AP • **For RFIC-EG:** EG with one analytical Dionex EGC, one analytical Dionex CR-TC, and one Dionex RFIC^{+} Eluent Degasser
Dual-Analysis Capillary IC or RFIC-EG System	• DP • DC with two IC Cubes • Two capillary detectors—two CDs, two EDs, or one CD and one ED • Dionex AS-AP • **For RFIC-EG:** EG with two capillary Dionex EGCs and two capillary Dionex CR-TCs

System Configuration	Typical Modules and Components Included
Dual-Analysis Analytical IC or RFIC-EG System	• DP • DC with two injection valves, two analytical column sets, and two analytical detectors—two CDs, two EDs, or one CD and one ED; *-or-* • TC with two injection valves, two column sets, and two detectors • Dionex AS-AP • **For RFIC-EG:** EG with two Dionex EGCs, two Dionex CR-TCs, and two Dionex RFIC+ Eluent Degassers
Dual-Analysis Capillary and Analytical RFIC-EG Hybrid System	• DP with one capillary pump and one analytical pump • DC with one IC Cube in the upper compartment, one column set and one injection valve in the lower compartment, and two detectors • EG with one capillary Dionex EGC and one analytical Dionex EGC

For detailed plumbing diagrams for these configurations, refer to Chapter 3, "Configurations," in *Dionex ICS-5000+ Ion Chromatography System Operator's Manual* (Document No. 065446). The manual is provided on the Thermo Scientific Reference Library DVD (P/N 053891).

Figure 1-1 illustrates a typical dual-analysis IC system.

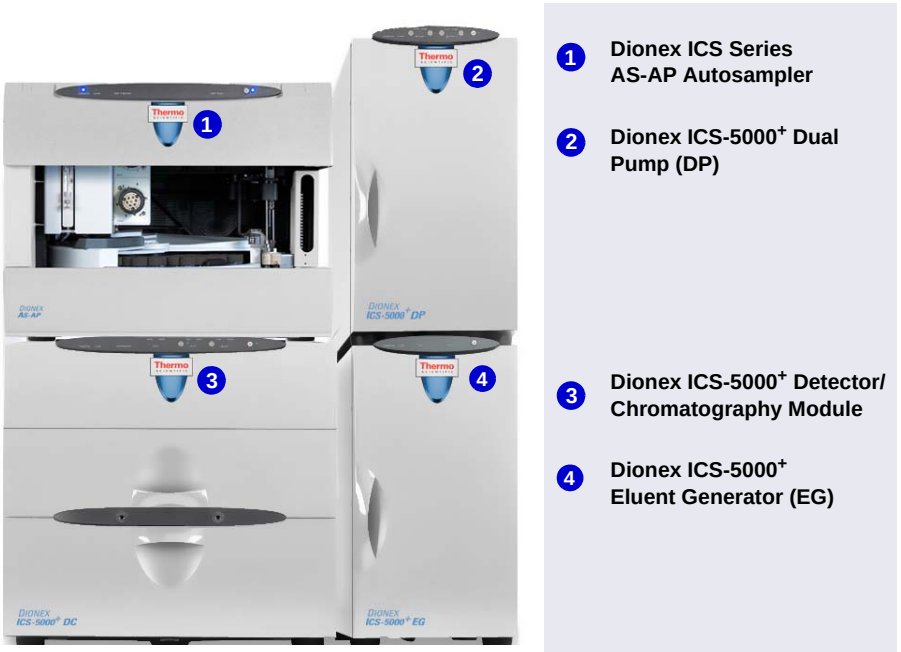


Figure 1-1. *Dionex ICS-5000$^+$ System for Dual-Analysis RFIC-EG*

1.6 Fitting and Tube Connection Guidelines

Follow these guidelines when connecting tube fittings in the Dionex ICS-5000$^+$ system.

- Use high-pressure fittings, 10-32 fitting bolts (P/N 074449), and high-pressure 10-32 double-cone ferrules (P/N 074373). These fittings are used even in low-pressure systems.
- When connecting tubing to a port, make sure the fitting bolt and ferrule are at least 2 mm (0.1 in) from the end of the tubing before you insert the tubing into the port. Do not position the ferrule and fitting bolt flush with the end of the tubing.

Capillary IC

- If you are installing a capillary system, do not shorten or lengthen the 0.062 mm (0.0025 in) ID blue PEEK™ (polyether ether ketone) tubing (capillary tubing) used for Dionex IC Cube connections, and do not

substitute different tubing. This tubing is precision cut at the factory, using a specialized cutter. Precision cut tubing is included in the Dionex IC Cube Tubing Kit (P/N 072186).

1.6.1 Connecting High-Pressure Tube Fittings

1. Install the fitting bolt and ferrule onto the tubing. Position the ferrule at least 2 mm (0.1 in) from the end of the tubing (see Figure 1-2).

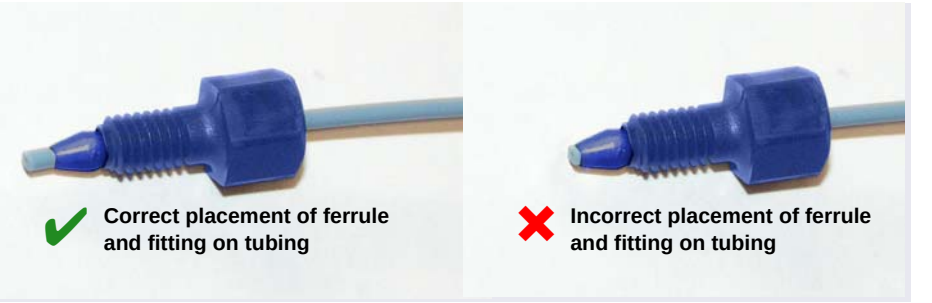


Figure 1-2. *Ferrule and Fitting Bolt Placement for Tubing Connections*

2. Insert the tubing into the port until it stops.

Figure 1-3. *Ferrule and Fitting Bolt Placement for Tubing Connections*

3. While maintaining pressure on the tubing to keep it in place in the port, tighten the fitting bolt fingertight and then tighten the fitting further by following the instructions in Section 1.6.2.

1.6.2 Tightening High-Pressure Fittings

1. Use your fingers to tighten the fitting bolt as tight as you can.
2. After finger-tightening, use a wrench to tighten the fitting an additional three-quarter turn (270 degrees).
3. If leaks occur, replace the fitting bolt (P/N 074449), ferrule (P/N 074373), and tubing.

1.6.3 Cutting Non-Capillary Tubing

If a connection does not require precision cut capillary tubing, you can use a tubing cutter to cut tubing to the required length. Make sure the cut is at a right angle to the length of the tubing and there are no nicks or burrs on the end. A tubing cutter (P/N 049584) is included in the DC Ship Kit (P/N 072011, standard DC; P/N 22171-62000, low-temperature DC). Refer to the instructions provided with the cutter.

2 • Unpacking Instructions

2.1 Unpacking Guidelines

- Check the shipping containers for any external signs of damage. If a container shows signs of damage, contact Technical Support for Dionex products immediately. In the U.S. and Canada, call 1-800-346-6390. Outside the U.S. and Canada, call the nearest Thermo Fisher Scientific office.
- Unpack modules in the following order (this order reflects the left-to-right location of modules in the installed system):

  Dionex AS-AP Autosampler

  Dionex ICS-5000$^+$ Detector/Chromatography Module (DC) or Dionex ICS-5000$^+$ Thermal Compartment (TC)

  Dionex ICS-5000$^+$ Eluent Generator (EG)

  Dionex ICS-5000$^+$ Dual Pump (DP) or Dionex ICS-5000$^+$ Single Pump (SP)
- Unpack these system components:

  Dionex ICS-5000$^+$ IC Cube (IC Cube) or Dionex ICS-5000$^+$ Automation Manager (AM)

  Dionex ICS-5000$^+$ Conductivity Detector (CD)

  Dionex ICS-5000$^+$ Electrochemical Detector (ED)

  Dionex ICS-5000$^+$ Eluent Organizer (EO)
- Unpack the computer (for Chromeleon)
- Unpack the consumable devices
- After unpacking, save the shipping container (and all packing material) for each product. These items will be needed if the product is ever shipped, or is moved to a new location.

2.2 Unpacking the Dionex AS-AP

CAUTION

Two or more persons must lift the Dionex AS-AP, which weighs more than 23 kg (50 lb). Lift the Dionex AS-AP 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 peuvent soulever l'Dionex AS-AP, qui pèse plus de 23 kg (50 lb). Ne soulevez l'Dionex AS-AP que par chaque côté du fond de l'armoire. Son soulèvement par la porte du panneau avant endommagera les charnières de la porte.

VORSICHT

Der Dionex AS-AP wiegt über 23 kg. Daher sollte das Gerät nur von zwei oder mehr Personen angehoben werden. Greifen Sie dazu an beiden Seiten unter das Gerät. Heben Sie den Autosampler nicht an der Vordertür an, da dadurch die Türangeln beschädigt werden könnten.

1. Follow the instructions printed on the shipping container to turn the container on its side, open the bottom flaps, and turn it right-side up again (see Figure 2-1).

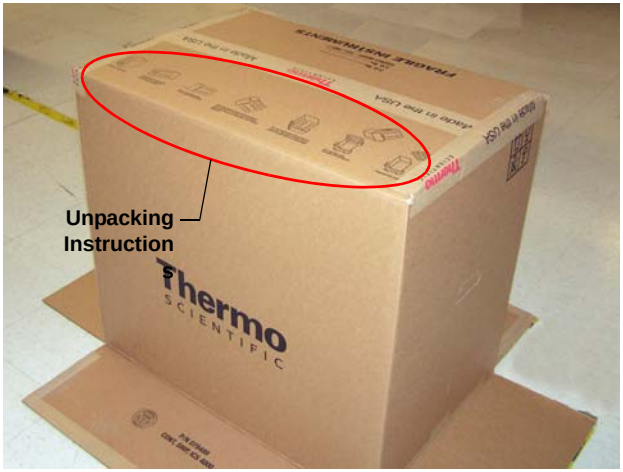


Figure 2-1. *Shipping container with bottom flaps opened*

2. Lift up the shipping container to remove it (see Figure 2-2), and then set the container aside. Remove the top foam packing insert.

Figure 2-2. *Lift up the shipping container*

3. Remove the Ship Kit box from the top of the module (see Figure 2-3).

Figure 2-3. *Ship Kit on top of the module*

4. Remove the foam packing cage (see Figure 2-4).
5. With two or more persons, grasp each side of the Dionex AS-AP cabinet bottom, lift up the module, and then place it on the bench.
6. Remove the polyethylene bag the module is shipped in.
7. Check that the main power switch on the rear panel is turned off.

Figure 2-4. *Module with packing cage removed*

8. Lift up the Dionex AS-AP front panel (see Figure 2-5) and pull out the foam insert that secures the needle arm and carousel cover during shipment (see Figure 2-6).

NOTE **Save the foam insert**. It is required to protect the needle when the autosampler is moved or shipped.

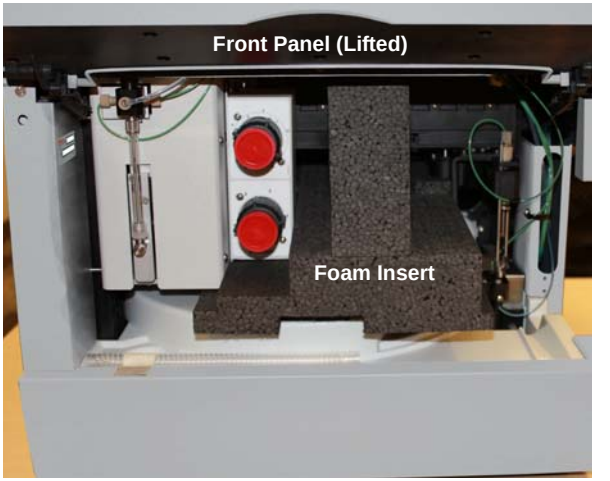


Figure 2-5. *Dionex AS-AP with foam insert for protecting the needle arm and carousel (Dionex AS-AP with optional valves shown)*

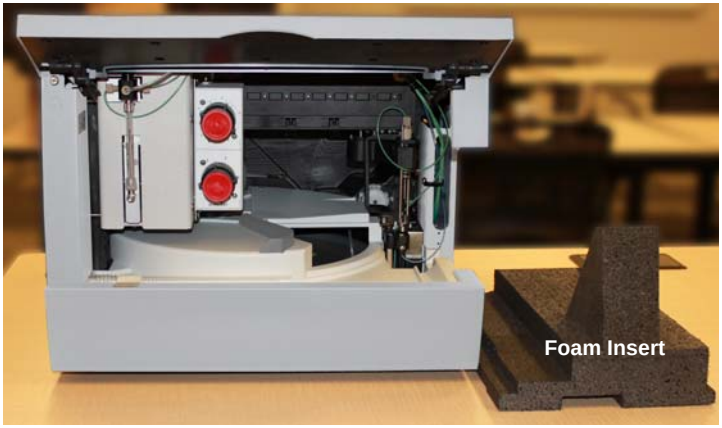


Figure 2-6. *Dionex AS-AP with foam insert removed*

9. Unpack the Dionex AS-AP Ship Kit (P/N 074929) (see Figure 2-7 and Figure 2-8).
10. Place the items in a convenient location and check them against the packing list (see Figure 2-9). If there are any discrepancies, contact Technical Support for Dionex products immediately.

Figure 2-7. *Ship Kit with packing list*

Figure 2-8. *Ship Kit items removed from box*

Figure 2-9. *Ship Kit items unpacked*

IMPORTANT **Save the shipping container and all other shipping materials for later use. Should it be necessary to return the Dionex AS-AP during the warranty period, Thermo Fisher Scientific recommends repacking the autosampler in the original shipping container.**

2.3 Unpacking the Dionex ICS-5000$^+$ Modules

This section contains step-by-step guidelines for unpacking the Dionex ICS-5000$^+$ modules. Although the Dionex ICS-5000$^+$ Eluent Generator is pictured here, the procedure is the same for the other modules. Unpack modules in the order specified in Section 2.1.

CAUTION

Two or more persons must lift the Dionex ICS-5000$^+$ Dual Pump (DP), Dionex ICS-5000$^+$ Single Pump (SP), Dionex ICS-5000$^+$ Detector/Chromatography Module (DC), or Dionex ICS-5000$^+$ Eluent Generator (EG). Each module weighs more than 18 kg (40 lb).

MISE EN GARDE

Au moins deux personnes peuvent soulever l'Dionex ICS-5000$^+$ Dual Pump (DP), Dionex ICS-5000$^+$ Single Pump (SP), Dionex ICS-5000$^+$ Detector/Chromatography Module (DC), ou Dionex ICS-5000$^+$ Eluent Generator (EG). Chaque module pèse plus de 18 kg (40 lb).

VORSICHT

Die folgenden Geräte sollten von zwei oder mehr Personen angehoben werden: Dionex ICS-5000$^+$ Dual Pump (DP), Dionex ICS-5000$^+$ Single Pump (SP), Dionex ICS-5000$^+$ Detector/Chromatography Module (DC), und Dionex ICS-5000$^+$ Eluent Generator (EG). Jedes dieser Geräte wiegt mehr als 18 kg.

1. Open the shipping container from the top and remove the foam spacer (see Figure 2-10).

Figure 2-10. *Fully-packed module with foam spacer on top*

2. Remove the Ship Kit from the shipping container (see Figure 2-11).
3. Using the handholds in the cardboard cradle, remove the module from the shipping container.

Figure 2-11. *Ship Kit packed with module (EG module shown)*

4. Place the module on the bench (see Figure 2-12).
5. Raise the front of the module about 5 cm (2 in) and remove the cardboard cradle.

Figure 2-12. *Module sitting on cardboard cradle (EG module shown)*

6. Remove the polyethylene bag the module is shipped in.

   Remember to save all shipping containers and packing material.
7. Check that the main power switch on the rear panel is turned off.

2.4 Installing the Safety Support Bracket

The safety support bracket performs the following functions:

- Stabilizes the system and prevents modules from tipping over
- Creates enough space between the DC and the adjacent module to ensure proper ventilation

NOTE It is especially important to install the bracket if a monitor arm will be mounted on the side of a module (see Section).

1. Locate the safety support bracket. Two versions of the bracket are available:
   - For a standard DC, use P/N 062225, provided in the standard DC Ship Kit (P/N 072011).
   - For a low-temperature DC, use P/N 22171-10001, provided in the low-temperature DC Ship Kit (P/N 22171-62000).
2. Hold the safety support bracket firmly against the rear panels of the adjacent modules (see Figure 2-13).

3. Tighten the captive thumbscrews.

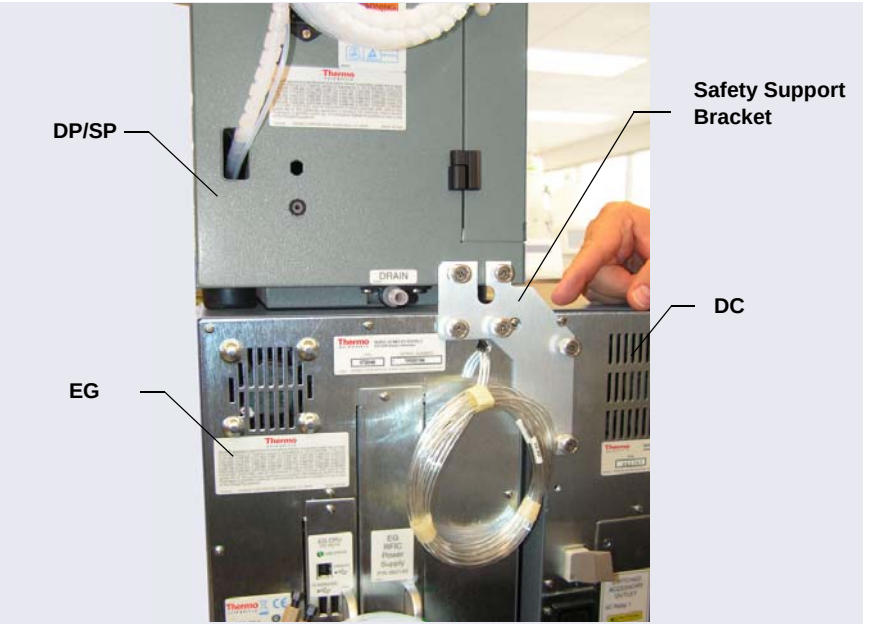


Figure 2-13. *Safety Support Bracket Installed on Module Rear Panels (P/N 062225 for a Standard DC Shown)*

2.5 Removing the Pump Shipping Screws (Optional)

For easier access to pump components during initial installation or when performing service procedures, remove the five red shipping screws on the pump component panel. The component panel can then be pulled forward to the front of the pump compartment, using one of the handles.

NOTE The upper and lower component panels slide forward together.

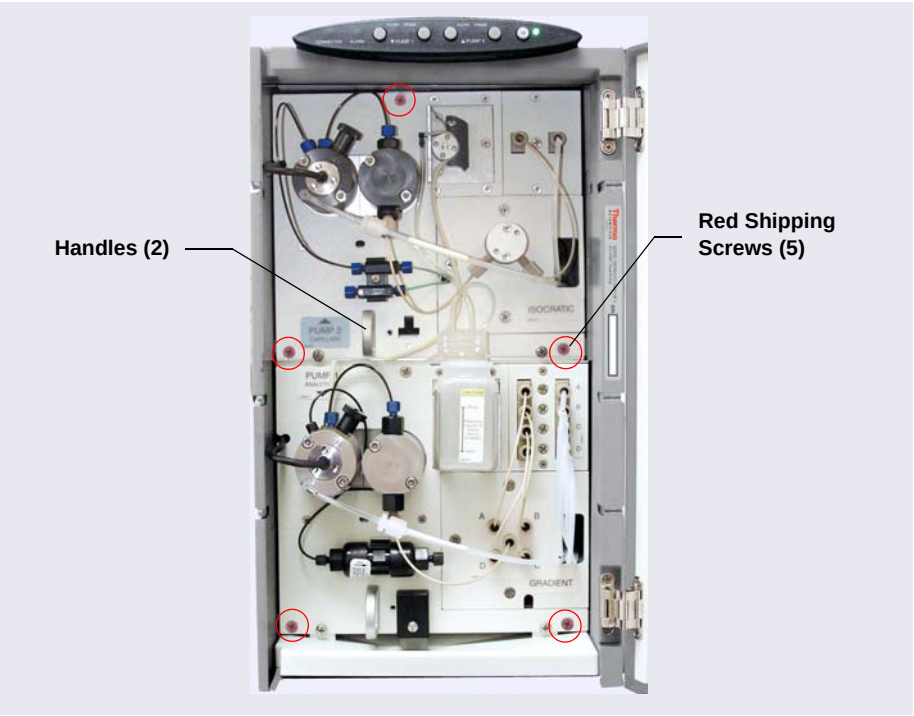


Figure 2-14. *Removing Pump Shipping Screws*

2.6 Unpacking the Computer

Remove the computer and all documentation from the computer box and place them on a workbench.

2.7 Installing the Computer

Configuration options include:

- Desktop or notebook PC with the Chromeleon 7 Chromatography Data System (release 7.1 SR2 or later) or Chromeleon 6.8 Chromatography Data System (release 6.8 SR12 or later).
- Monitor mounted on a Dionex ICS-5000+ module (typically, the DC)
- Wired or wireless keyboard and mouse

1. Chromeleon runs under the Microsoft™ Windows™ 7 and Windows XP operating systems. If you purchased a computer outside of North America, verify that it meets current system specifications. Refer to http://www.thermoscientific.com/dionex.

   When you purchase Chromeleon and a computer from Thermo Fisher Scientific, the chromatography software and computer hardware are installed at the factory.

2. Follow the instructions in the computer installation guide to hook up the computer components.

3. (Optional) When you finish, go to Section to install a monitor arm.

IMPORTANT **Before attaching the monitor arm to the side of any Dionex ICS-5000+ module, a safety support bracket (P/N 062225) must be installed to stabilize the system. For installation instructions, see Section 2.4.**

4. Follow the instructions in the computer monitor guide to hook up the monitor.

   NOTE Plug in the receiver for a remote keyboard into a USB port on the DC rear panel.

2.8 Unpacking Consumable Devices

Remove the consumable devices (for example, Dionex EGC, CR-TC, suppressor, and CRD) from their shipping boxes. Save the EGC shipping container; it may be required for storage or disposal of the EGC.

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.

La cartouche de 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.

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

3 • System Setup

This chapter provides instructions for setting up the system hardware and Chromeleon software. After completing the setup steps, go on to the plumbing instructions in Chapter 4.

Notes on USB Connections

Always install Chromeleon *before* connecting the USB (Universal Serial Bus) cables and turning on the power to the modules and the PC. This ensures that the USB driver for the modules is automatically loaded and the Windows operating system can detect the new modules when their power is turned on.

3.1 System Setup Checklist

Setup Step	Page
❑ Connect the power cords	page 28
❑ Plug in the EGC and CR-TC (RFIC-EG only)	page 29
❑ Set up the DC for capillary IC applications	page 29
❑ Set up the DC for analytical IC applications	page 36
❑ Set up the TC (analytical IC applications only)	page 38
❑ Connect the autosampler	page 40
❑ Connect modules to the computer	page 45
❑ Set up the chromatography software	page 49
❑ Connect drain lines	page 59
❑ Degas the water	page 65
❑ Set up the reservoirs	page 65
❑ Set up the piston seal wash system	page 67
❑ Prime the pump	page 69
❑ Check the conductivity of the water (CD system only)	page 70

3.2 Connecting the Power Cords

1. Locate the power cords for the Dionex ICS-5000+ system in the box that contains accessory parts.
2. Verify that the main power switch on the rear panel of each module is turned off. (The main power switch may be turned on accidentally when the module is unpacked.)
3. Connect a power cord (IEC 320 C13) (ordered separately) from the main power receptacle on the rear panel of each module to a grounded power source. No adjustment is needed to select the line voltage (the power supply is auto-sensing).

SHOCK HAZARD—To avoid electrical shock, use a grounded receptacle. Do not operate the Dionex ICS-5000+ modules, or connect them to an AC power source, without an earthed ground connection.

The power supply cord is used as the main disconnect device. Make sure the socket-outlet is located near the Dionex ICS-5000+ modules and is easily accessible.

Operation at AC input levels outside of the specified operating voltage range may damage the Dionex ICS-5000+ modules.

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.

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.

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

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

3.3 Plugging in the Dionex EGC and CR-TC (RFIC-EG System Only)

NOTE If your system does not include an eluent generator, you can skip this section and go on to either:

- Installing a DC for capillary IC (Section 3.4)
- Installing a DC for analytical IC (Section 3.5)
- Installing a TC (Section 3.6)

1. Open the EG door.
2. Pull the tray forward until it reaches the stop.

Capillary IC

3. If you are installing a capillary system, locate the capillary IC Dionex EGC adapter (P/N 072133) in the EG Ship Kit (P/N 072047). Install the adapter on top of the Dionex EGC holder (see Figure 3-1).

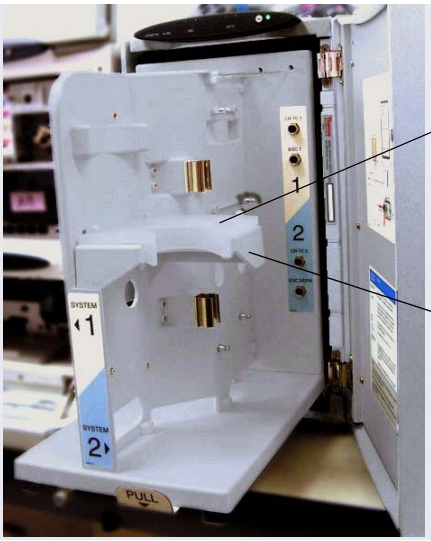


Figure 3-1. *Capillary IC Dionex EGC Adapter Installed*

4. The Dionex EGC cable is attached to the cartridge with a cable tie (see Figure 3-2). Cut the cable tie to release the cable.

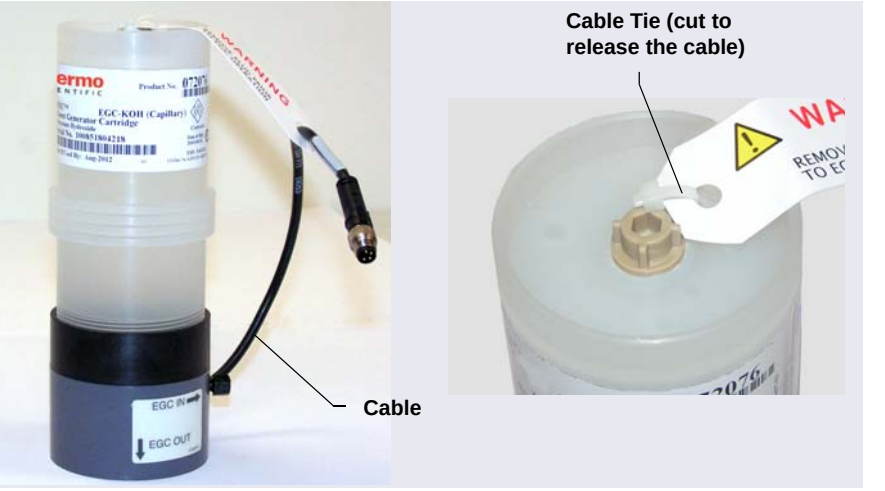


Figure 3-2. *Dionex EGC Cable Attached to Cartridge (Capillary Version Shown)*

5. Orient the Dionex EGC with the electrolyte reservoir on top and slide it down into the holder (see Figure 3-3). Install the Dionex EGC on the left side for system 1 and the right side for system 2.

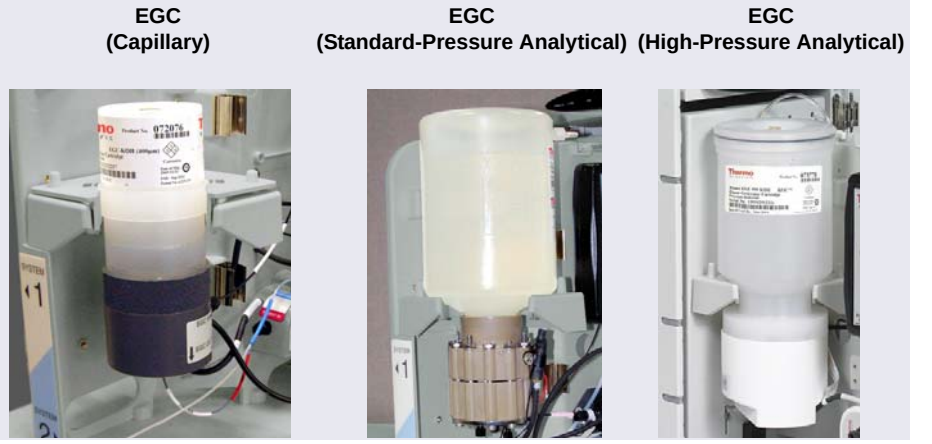


Figure 3-3. *Dionex EGC Installed in Holder*

6. If you are installing system 1:

   a. Orient the Dionex CR-TC with the **ELUENT IN** port (yellow label) toward the front of the EG and push the Dionex CR-TC firmly onto the ball studs on the left side of the EG.

   b. Route the Dionex EGC and CR-TC electrical cables to the right side of the EG tray.

7. If you are installing system 2:

   Orient the Dionex CR-TC with the **ELUENT IN** port (yellow label) toward the back of the EG and push the Dionex CR-TC firmly onto the ball studs on the right side of the EG.

8. Connect the CR-TC and EGC electrical cables:

   a. Align the three pins inside the Dionex CR-TC cable connector with the holes in the **CR-TC 1** (or **CR-TC 2**) bulkhead connector. Push the cable connector firmly onto the connector (see Figure 3-4). Twist the locking ring on the cable connector fingertight to secure it.

   b. Align the four pins inside the Dionex EGC cable connector with the holes in the **EGC 1** (or **EGC 2**) bulkhead connector. Push the cable connector firmly onto the bulkhead connector (see Figure 3-4). Twist the ring on the cable connector fingertight to secure it.

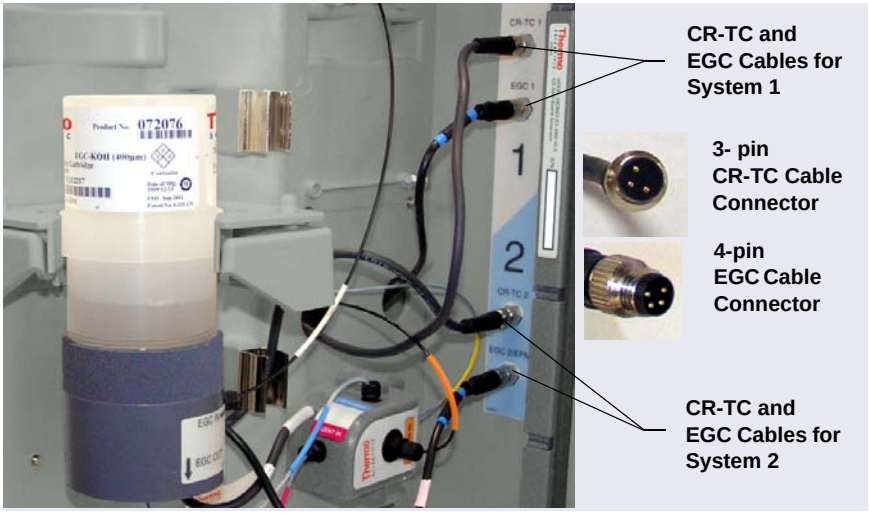


Figure 3-4. *Dionex EGC and CR-TC Electrical Cables Installed (Capillary Dionex EGC Version Shown)*

9. If you are installing a DC for capillary IC, go on to Section 3.4.

   If you are installing a DC for analytical IC, go on to Section 3.5.

   If you are installing a TC, go on to Section 3.6.

Capillary IC

3.4 Setting Up the DC for Capillary IC Applications

Figure 3-5 is an example of the upper compartment of a DC after the components for a capillary IC system have been installed and the plumbing is completed.

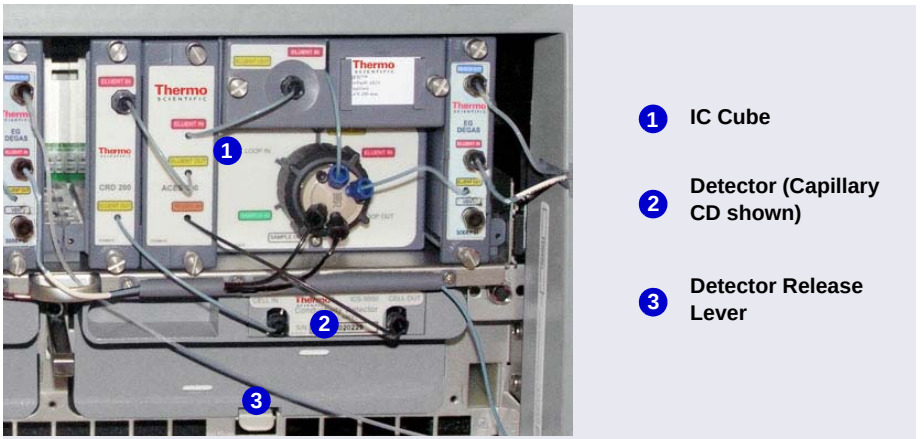


Figure 3-5. *Example DC Upper Compartment with Capillary IC Components Installed for System #2*

NOTE The 0.062 mm (0.0025 in) ID blue PEEK tubing (capillary tubing) used for IC Cube connections is cut at the factory using a specialized precision cutter. Do not cut this tubing or substitute different tubing.

Capillary IC

3.4.1 Installing the IC Cube Component Cartridges

The Dionex IC Cube houses three removable component cartridges and one column tray for running capillary IC applications. For reference, Figure 3-6 shows an IC Cube after these items have been installed.

Figure 3-6. *Example Dionex IC Cube with Cartridges and Column Tray Installed*

The required cartridges depend on the detection type (see Table 3-1).

Detection Type	Required Cartridges
Conductivity	• EG degas (typically installed at the factory) • CES • CRD (an option for anion applications) • CRD bypass (required if a CRD cartridge is not installed) • Column tray
Electrochemical[a]	• EG degas (typically installed at the factory) • Suppressor bypass • CRD bypass • Column tray

Table 3-1. *Dionex IC Cube Cartridge Requirements*

a. If you are setting up the system for electrochemical detection and the EG degas cartridge is already installed, no additional cartridges are required. Leave the suppressor bypass and CRD bypass cartridges in place and go on to "Installing the CD or ED" on page 36.

Capillary IC

3.4.2 Installing the EG Degas, CRD, or CES Cartridge

1. To install an EG degas cartridge:

   a. Remove the cap from the regenerant port on the rear of the cartridge. Slide the cartridge into the right-most slot of the Dionex IC Cube (see Figure 3-6). Push the cartridge firmly into the slot and tighten the thumbscrews fingertight only.

   b. Connect the green PEEK vent line (P/N 088271) supplied with the cartridge to the **VENT** port on the cartridge. Route the vent line through the tubing chase to the rear panel.

2. To install a CRD or CES cartridge:

   a. Loosen the thumbscrews on the CRD or CES bypass cartridge and pull the bypass cartridge out of the Dionex IC Cube. Save the bypass cartridge.

   a. Remove the caps from the regenerant ports on the rear of the CRD or CES cartridge. Slide the cartridge into its slot in the Dionex IC Cube (see Figure 3-6). Push the cartridge firmly into the slot and tighten the thumbscrews fingertight.

NOTE Install the saved regenerant port caps onto the CRD and CES cartridge ports. Save the bypass cartridges. The bypass cartridges must be reinstalled if the Dionex IC Cube is used for an application that does not require a CRD or suppressor.

Capillary IC

3.4.3 Installing the Detector in the DC

Installing the CD or ED

NOTE Before installing an ED (P/N 072042), follow the instructions in Section B.1 to install the ED amperometry cell.

1. Verify that the main power switch on the rear panel of the DC is off.

2. Insert the capillary CD (P/N 072041) or ED (P/N 072042) into the upper compartment of the DC (see Figure 3-5).
   - For a single-system configuration, it does not matter on which side of the compartment the detector is installed. Typically, the left side is used.
   - For a dual-system configuration, install the detector for system #1 on the left side and the detector for system #2 on the right side.
3. Push firmly to plug the electrical plug on the back of the detector into the receptacle on the rear wall of the DC compartment. You should hear a click when the detector is fully seated.
4. For an ED, connect the cell cable and the reference electrode cable.

If it is necessary to remove the detector from the DC:

1. Press the release lever located below the detector (see Figure 3-5).
2. Grasp the top of the detector and pull outward to remove the detector from the compartment. **Do not pull from the CELL IN and CELL OUT fittings**.

If you are installing an autosampler, go on to Section 3.7. If not, go on to Section 3.8.

Analytical IC

3.5 Setting Up the DC for Analytical IC Applications

Figure 3-7 is an example of the interior of the DC after the components for two analytical IC systems have been installed.

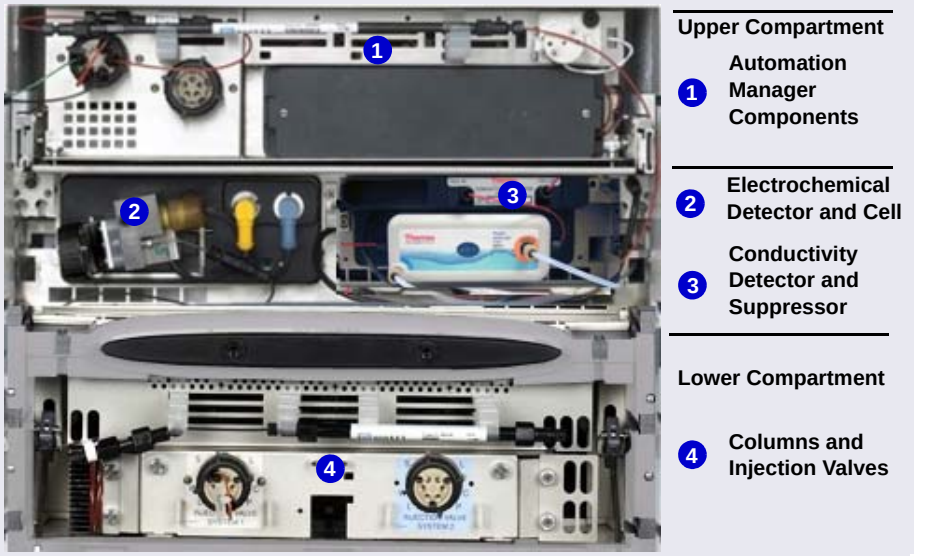


Figure 3-7. *Example DC Interior View: Dual-Analytical System*

Analytical IC

3.5.1 Installing the CD or ED

NOTE Before installing an ED (P/N 072042), follow the instructions in Section B.1 to install the ED amperometry cell.

1. Verify that the main power switch on the rear panel of the DC is off.
2. Pull out the DC upper compartment tray until it stops.
3. Install the analytical CD (P/N 079829) and/or the ED in the bottom half of the DC upper compartment (see Figure 3-7).
   - For a single-system configuration, it does not matter on which side of the compartment the detector is installed.
   - For a dual-system configuration, install each detector above the corresponding injection valve.

4. Insert the detector into the compartment and push firmly to plug the electrical plug on the back of the detector into the receptacle on the rear wall of the DC compartment.

   You should hear a click when the detector is fully seated.

5. For an ED, connect the cell cable and the reference electrode cable.

If it is necessary to remove the detector from the DC:

1. Press the release lever located below the detector.
2. Grasp the top of the detector and pull outward to remove the detector from the compartment. **Do not pull from the CELL IN and CELL OUT fittings.**

Analytical IC

3.5.2 Installing the Suppressor in the DC

1. Note the two slots on the rear of the suppressor and the two mounting tabs on the CD (below the cell).
2. Press the suppressor onto the mounting tabs and slide it to the right to secure the suppressor onto the detector.
3. Pull out slightly on the center of the suppressor to verify that it is securely fastened.
4. Plug the suppressor cable into the appropriate connector next to the CD (see Figure 3-8).

Figure 3-8. *Installing the Suppressor (Left-Side Installation)*

If it is necessary to remove the suppressor from the detector:

Unplug the suppressor and then slide it to the left a few millimeters (to detach it from the detector). Then, pull the suppressor toward you.

5. If you are installing an autosampler, go on to Section 3.7. If not, go on to Section 3.8.

Analytical IC

3.6 Setting Up the TC

NOTE The TC cannot be configured for capillary IC applications.

3.6.1 Installing the Temperature Stabilizer in the TC (Optional)

Four column brackets are installed in the TC at the factory. When you finish this installation procedure, the screws that hold the column brackets in place will also hold the temperature stabilizers in place.

1. Remove the two screws from each column bracket and remove the brackets from the TC (see Figure 3-9).

Figure 3-9. *TC Column Bracket Positions*

2. The TC can contain up to two temperature stabilizers (microbore, P/N 064650; standard bore, P/N 064548). Determine the mounting site and orientation for each:
   - The temperature stabilizer can be mounted along either the top or bottom edge of the thermal element (see Figure 3-9).
   - The mounting holes on the temperature stabilizer are closer to one side of the stabilizer than the other. Always orient the temperature stabilizer so that the mounting holes are closer to the *outside edge* of the thermal element. This ensures that the temperature stabilizer is in full contact with the thermal element.

- When mounted on the top edge, the temperature stabilizer inlet and outlet are on the left side. When mounted on the bottom edge, the inlet and outlet are on the right side. Determine which orientation will allow you to minimize the length of connections to other system components.

3. Orient the temperature stabilizer as required and press it onto the standoffs near the top or bottom edge of the thermal element. For example, Figure 3-10 shows a temperature stabilizer installed on the bottom edge.

Figure 3-10. *TC Temperature Stabilizer Installed*

4. Repeat Step 3 for the second temperature stabilizer, if needed.
5. Reinstall the column brackets in the TC as follows:
   a. Check that the outside edge of the temperature stabilizer is flush with the edge of the thermal element.
   b. While holding the temperature stabilizer in place, attach the brackets to positions 1 and 4 by loosely installing first the screw in the *top* of each bracket and then the screw in the *bottom* of each bracket. Use the 2.5 mm hex key (P/N 052952) provided in the TC Ship Kit (P/N 064789) to install the screws.
   c. Repeat the steps above to reinstall the brackets in positions 2 and 3.
   d. Tighten all eight screws evenly.

Analytical IC

3.6.2 Installing the Columns in the TC

The TC can hold up to three separator columns with inner diameters of 1 to 9 mm and maximum lengths of 30 cm (11.8 in).

1. This section provides brief installation instructions for the guard column and separator column. Refer to the column manual for detailed installation and start-up instructions. Column manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).
2. Remove the guard column and separator column from their boxes.
3. Remove the fitting plugs from the ends of each column.
4. The column clip (P/N 064786) consists of two pieces: a base and a retaining ring (see Figure 3-11).
5. Remove the retaining ring from the clip by pressing lightly on the ring in the direction indicated by the arrows on the ring.

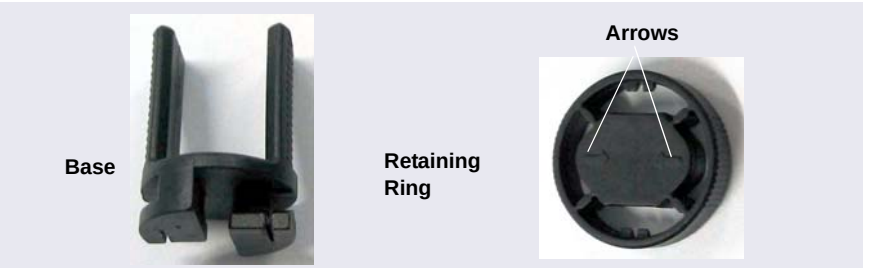


Figure 3-11. *TC Column Clips*

6. Attach the base of the clip to a column bracket, and then rotate the clip 90 degrees clockwise (see Figure 3-12).
7. Press the column into the clip and reinstall the ring.

Figure 3-12. *Column Clips Installed*

Analytical IC

3.6.3 Installing the TC Column ID (Identification) System

The TC electronic column ID system lets you store important column properties on a column ID chip card. To implement the ID system, you must complete all of the following tasks:

- Install a column ID chip card for each column to be monitored (see below).
- Specify the columns you want to monitor in the TC configuration properties dialog box (see page 57).
- Select the column properties to be monitored (see page 42).

Analytical IC

Installing a Column ID Chip Card

The TC Ship Kit (P/N 064789) includes two column ID chip cards (P/N 5710.1500). If more chip cards are needed, order the optional Column ID Kit (P/N 6710.1505; five chip cards).

1. To attach a column ID chip card to the column, wrap the strap around the column, insert the rivet into one of the holes on the strap, and press to secure the strap to the column (see Figure 3-13).

Figure 3-13. *Attaching the Column ID System to the Column*

2. Insert the chip card (with the Thermo Fisher Scientific logo facing up) into the appropriate card reader (A, B, C, or D) along the top of the compartment (see Figure 3-14).

   When the chip card is installed correctly, the LED next to the slot is green.

Figure 3-14. *Inserting a Column ID Chip Card*

3. Repeat the steps above to install the other chip card.

Analytical IC **Selecting the Column Properties to Monitor**

NOTE Complete this section after adding the TC to the instrument (or timebase) (see Section 3.9.4) and configuring the columns in Chromeleon (see Section 3.9.5).

1. Close the TC door, if it is open. (You cannot select column properties unless the door is closed.)
2. Display the ePanel Set (Chromeleon 7) or panel tabset (Chromeleon 6.8) and click the **TC** tab.
3. On the TC panel, click **Column Details**. This opens the Column Details screen.
4. For each column, specify the properties to be monitored by the column ID system. When you finish, click **Close**.

3.7 Connecting the Autosampler

This section provides brief instructions for connecting an autosampler to a single injection valve in a DC (or TC). For detailed instructions, refer to the operator's manual for the autosampler you are connecting. The manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

3.7.1 Connecting the Autosampler Sample Transfer Line

1. Place the autosampler to the left of the DC (or TC) on the workbench. A Thermo Scientific Dionex AS-DV Autosampler can be placed on top of the DC, if preferred.
2. Route the sample transfer line from the autosampler to the injection valve in the DC (or TC).
3. Connect the line to port 5 on the injection valve.

NOTE In a capillary system, port 5 is labeled **SAMPLE IN**. In an analytical system, port 5 is labeled **S**.

3.7.2 Connecting the Injection Valve Waste Line

For a Dionex AS-DV

1. Cut a length of 0.25 mm (0.010 in) ID black PEEK tubing (analytical, P/N 042690; capillary, P/N 082647) long enough to reach from the injection valve to the waste container.
2. Connect one end to port 6 on the injection valve.

   NOTE In a capillary system, port 6 is labeled **SAMPLE OUT**. In an analytical system, port 6 is labeled **W.**

3. Route the other end to waste.

For a Thermo Scientific Dionex ICS Series AS-AP Autosampler

Capillary IC

1. For a capillary system:
   a. Locate the following items in the Dionex AS-AP Ship Kit (P/N 074929):
      - 0.75 mm (0.030 in) ID green PEEK tubing (P/N 044777)
      - 0.25 mm (0.010 in) ID black PEEK tubing (P/N 042690, for analytical; P/N 082647, for capillary)
      - 10-32 fitting bolt (P/N 074449) and 10-32 double-cone ferrule (P/N 074373)

   b. Cut a 61 cm (24 in) length of black tubing. If this is not long enough to reach from the injection valve to the Dionex AS-AP waste port, add an additional length of green PEEK tubing.

Analytical IC

2. For an analytical system:
   a. Locate the system tubing package supplied with the injection valve. One tubing package with precut and labeled tubing (either microbore or standard bore) is provided for each valve installed in the DC.
   b. In the system tubing assembly bag, locate the 0.75 mm (0.030 in) ID green PEEK tubing assembly, labeled **TO INJ VALVE-W.**

   NOTE To improve sample loading precision in analytical systems, add a 51 cm (20 in) piece of black PEEK tubing to the green waste line.

3. Connect one end of the waste line to port 6 on the injection valve. For a capillary system with a two-piece waste line, connect the black tubing to the injection valve.

   NOTE In a capillary system, port 6 is labeled **SAMPLE IN**. In an analytical system, port 6 is labeled **W**.

4. Route the line to the Dionex AS-AP waste port and insert the line into one of the round openings in the waste port (see Figure 3-15).

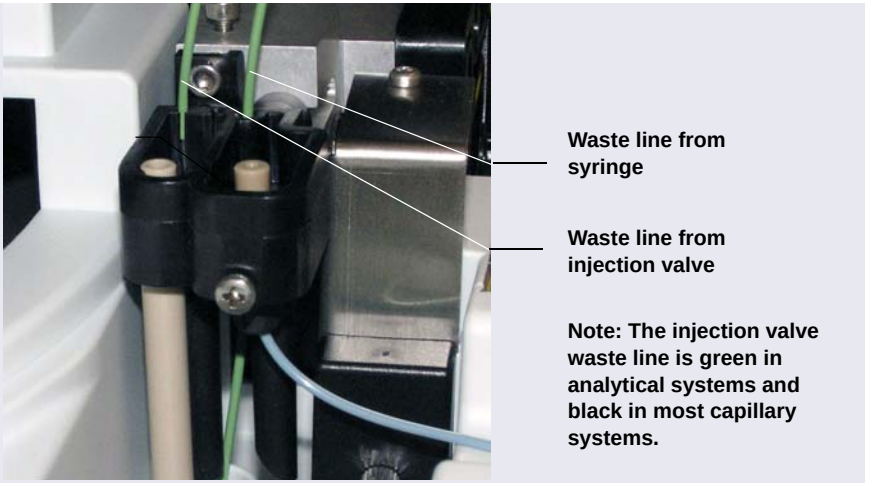


Figure 3-15. *Injection Valve Waste Line Installed in Dionex AS-AP Waste Port*

5. To ensure the waste lines do not interfere with needle arm movement in the Dionex AS-AP, secure the excess tubing with the flexible tubing tie in the slotted compartment next to the needle (see Figure 3-16).

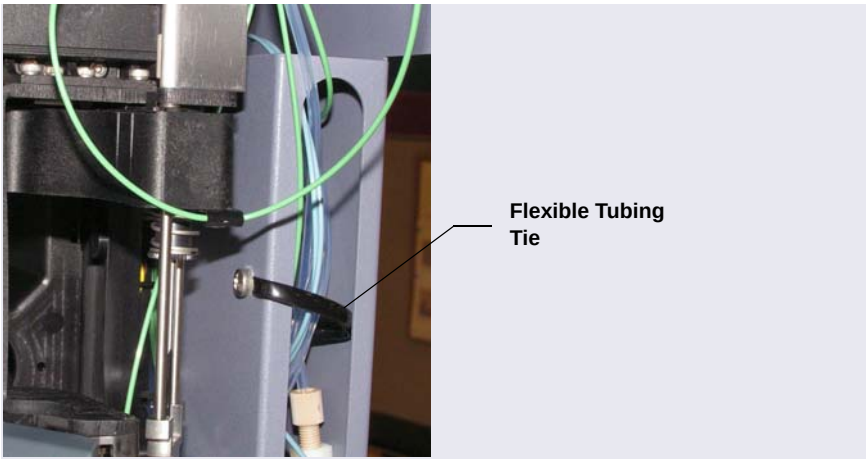


Figure 3-16. *Flexible Tubing Tie in Dionex AS-AP Slotted Compartment*

3.8 Connecting Modules to the Computer

3.8.1 USB Cables

All USB connections require standard A-to-B cables. The “A” connector is the flat, rectangular end of the cable; the “B” connector is the smaller, hexagonal end (see Figure 3-17).

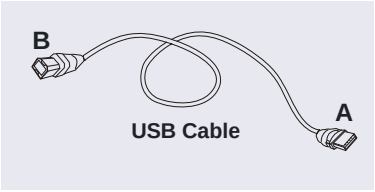


Figure 3-17. *USB Cable*

These USB cables are shipped with Dionex ICS-5000$^+$ modules:

- The DC Ship Kit (standard DC, P/N 072011; low-temperature DC, P/N 22171-62000) includes a 1.8 m (6 ft) USB cable (P/N 960777).

- The DP, EG, SP, and TC Ship Kits include a 1 m (3 ft) USB cable (P/N 063246).

IMPORTANT **The USB standard limits the USB cable length to 5 m (5.5 yds). Each USB module can be separated from the PC by no more than five hubs. Thus, each USB module can be located no more than 30 m (32 yds) from the PC.**

3.8.2 USB Compatibility

All Dionex ICS-5000+ modules, as well as other Dionex modules connected to them (for example, an autosampler), are equipped with USB receptacles. Your system may include a combination of the following:

- Dionex modules with an internal USB 2.0 hub (powered)
- Dionex modules with an internal USB 1.1 hub (unpowered)
- Dionex modules with no internal USB hub
- An external USB 2.0 hub

To avoid problems caused by incompatibility between USB 2.0 and USB 1.1, identify the USB version of each system component to be installed (see Table 3-2) and observe the rules for connections shown in Figure 3-18.

Type of Hub	Module	Notes
USB 2.0 internal hub (powered)	Dionex ICS-5000+ DC Dionex ICS-5000+ EG	When you turn off the power using the **POWER** button on the front of the module (and the main power cord is connected), the USB 2.0 hub remains powered on. Thus, all modules connected downstream will remain connected to Chromeleon.
USB 1.1 internal hub (unpowered)	Dionex AS-AP Dionex ICS-5000+ DP Dionex ICS-5000+ SP	When you turn off the power using the **POWER** button on the front of the module, the USB 1.1 hub is powered off and all modules downstream are disconnected from Chromeleon.
No internal hub	Dionex ICS-5000+ TC Dionex PDA Dionex VWD	

Table 3-2. *USB Versions of Dionex Modules*

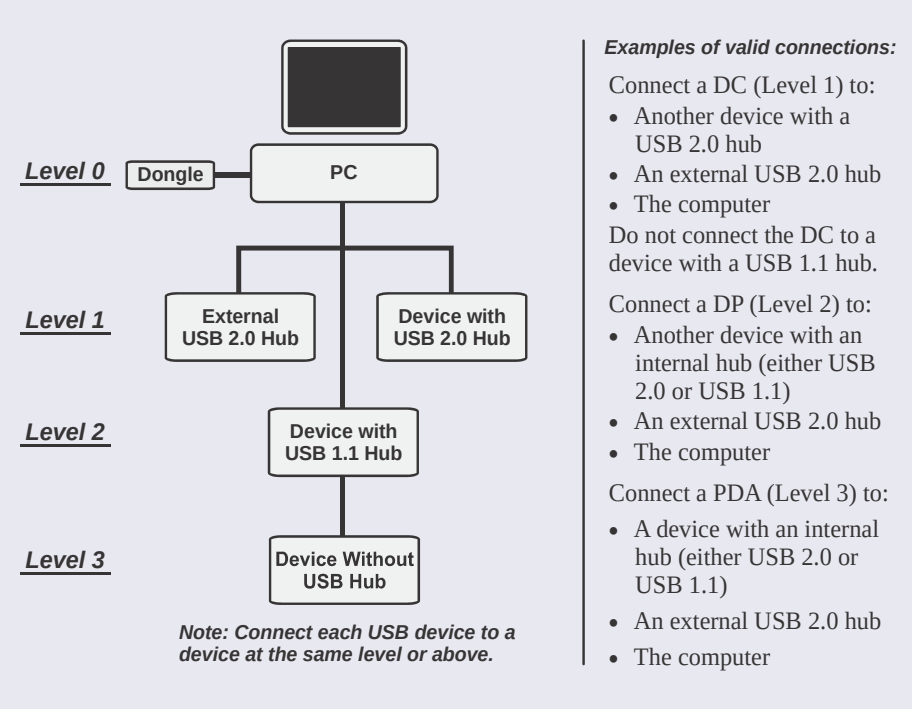


Figure 3-18. *Overview of Dionex ICS-5000^{+} System USB Connections*

3.8.3 USB Connection Examples

IMPORTANT **Before connecting the USB cables, verify that Chromeleon 7 or Chromeleon 6.8 was installed on the PC and the license code was entered. If the chromatography software is not installed first, Windows will be unable to identify the modules when the power is turned on. See Section 3.13 for software installation information.**

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

IMPORTANT **Do not turn on the power to any of the modules until you have connected all of the USB cables.**

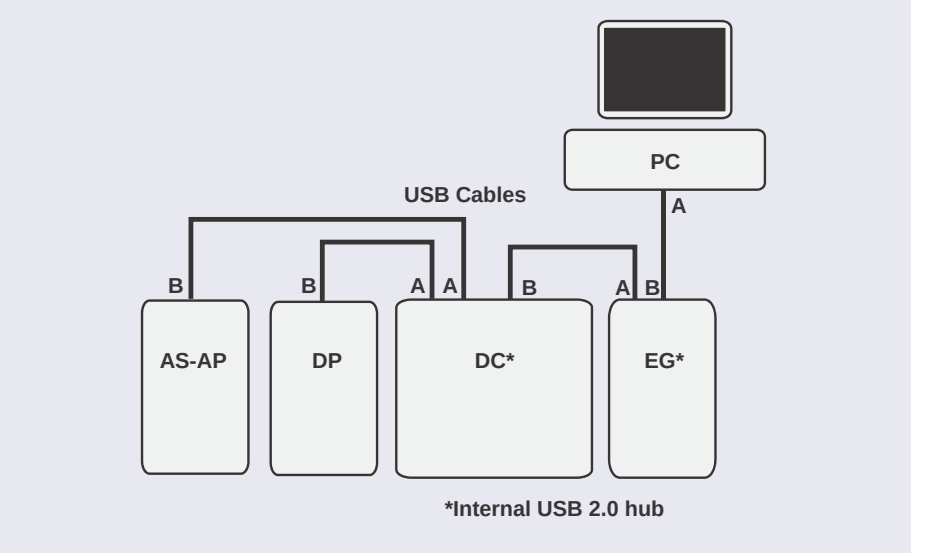


Figure 3-19. *Example Connections: Multiple Modules Connected via Internal Hubs*

If the number of Dionex ICS-5000+ modules exceeds the number of available USB ports, connect the modules to the system with an external USB 2.0 hub (see Figure 3-20).

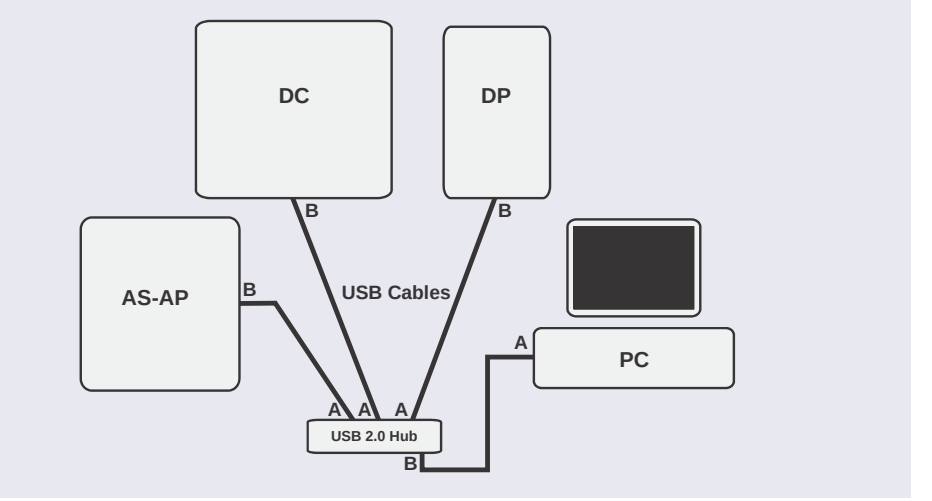


Figure 3-20. *Example Connections: Multiple Modules Connected via an External Hub*

3.9 Setting Up the Chromatography Software

The Dionex ICS-5000$^+$ requires the Chromeleon 7 Chromatography Data System (release 7.1 SR2 or later) or Chromeleon 6.8 Chromatography Data System (release 6.8 SR12 or later).

NOTE All references in Chromeleon to Dionex ICS-5000 systems also apply to Dionex ICS-5000$^+$ systems.

3.9.1 Installing the Software and License

When you purchase Chromeleon software and a PC from Thermo Fisher Scientific, the chromatography software and the computer hardware are installed at the factory. In this case, you may omit this section.

To install Chromeleon software and the software license, follow the instructions in the appropriate installation guide. The guides are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

- For Chromeleon 7, refer to *Chromeleon 7 Installation Guide*.
- For Chromeleon 6.8, refer to *Installing Chromeleon with a Dionex Ion Chromatograph* (Document No. 031883).

3.9.2 Starting the Instrument Controller Service or Server

If you have not already done so, turn on the computer power and log on to Windows as an administrator. For a network computer, log on as a user with local computer administrator privileges.

Starting the Chromeleon 7 Instrument Controller Service

On the Windows taskbar, right-click the Chromeleon icon ( or ) in the system tray and click **Start Chromeleon Instrument Controller**. The icon changes to gold ( or ) 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 icon is not on the Windows taskbar, click **Start > All Programs > Chromeleon 7 > Services Manager** to open the Services Manager and click **Start Instrument Controller**.

Starting the Chromeleon 6.8 Server

On the Windows taskbar, right-click the Chromeleon icon () in the system tray and click **Start Server**. The icon changes to gold () to indicate that the Chromeleon Server is starting. When the Chromeleon Server is running (idle), the icon changes to gray ().

If the Chromeleon icon is not on the Windows taskbar, click **Start** > **All Programs > Chromeleon > Server Monitor** to open the Server Monitor and click **Start**.

3.9.3 Installing the USB Device Drivers

IMPORTANT **Before turning on the power to any Dionex ICS-5000+ modules, verify that Chromeleon 7 or Chromeleon 6.8 was installed on the PC and the license code was entered. If the chromatography software is not installed first, Windows will be unable to identify the modules.**

1. Before turning on the power, verify that all accessory devices that are equipped with electrical connections (the Dionex EGC, Dionex CR-TC, detector, IC Cube, suppressor, column ID chip cards, and so on) are plugged into their respective modules. Chromeleon recognizes the installed devices at power-up and includes them in the configuration.
2. Turn on the main power switch on the rear panel of each Dionex ICS-5000+ module.

   NOTE Always leave the main power switch on unless instructed to turn it off. Use the **POWER** button on the front of each Dionex ICS-5000+ module for on/off control. To turn off a module, press and hold the **POWER** button for 2 seconds.

3. If you are installing an autosampler, turn on the autosampler power, also.
4. Windows automatically detects the new USB devices. A message flashes on the screen to inform you that new hardware was found.
5. The driver installation varies, depending on the version of Windows installed on the computer:

   Windows 7 automatically performs the USB driver installation. After the installation is complete, the Chromeleon New Instrument (Chromeleon 7) or New Timebase (Chromeleon 6.8) dialog box appears. Accept the

default option (**Create a new instrument** or **Create a new timebase**) and click **OK**).

The Chromeleon USB Auto Configuration Wizard appears. If you are installing more than one device, leave the wizard open and wait for Windows to complete the driver installation for all devices. Then, go on to Section 3.9.4 to configure the system in Chromeleon.

Windows XP launches the Found New Hardware Wizard. Complete the wizard by selecting the following options:

- If asked whether Windows can connect to Windows Update to search for software, select **No, not this time**.
- Accept the default option (**Install the software automatically**) and click **Next >**.
- When the hardware wizard reports that the software for the first device has been installed, click **Finish**.

The USB Auto Configuration Wizard appears. If you are installing more than one device, leave the wizard open and complete the Found New Hardware Wizard for the other devices. After completing the driver installation for all devices, go to Section 3.9.4 to configure the modules.

3.9.4 Configuring the Modules in Chromeleon

The Chromeleon USB Auto Configuration Wizard appears automatically when a USB device that is not assigned to a Chromeleon 7 instrument or a Chromeleon 6.8 timebase is powered up. You can use the wizard to create a new instrument or timebase for your Dionex ICS-5000$^+$ system.

If you prefer, click **Cancel** to close the wizard, and then manually create an instrument or timebase.

- For instructions on how to manually create an instrument in Chromeleon 7, refer to the Chromeleon 7 Help or to *Chromeleon 7 Installation Guide.*
- For instructions on how to manually create a timebase in Chromeleon 6.8, refer to the Chromeleon 6.8 Help or to *Installing Chromeleon with a Dionex Ion Chromatograph* (Document No. 031883).

The software installation manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

3.9.5 Selecting Configuration Properties

When you add a module to an instrument or timebase, default configuration properties are selected. For each module, verify the default settings and select other settings as required.

To open a configuration properties dialog box, right-click the module in the instrument or timebase and click **Properties**. The tab pages available in the dialog box, as well as the options on each tab page, depend on the type of device. Some example tab pages are described in the following sections. For details about a tab page, click **Help**.

EG Configuration Properties

On the **Cartridges** tab page (see Figure 3-21), select the following settings for each Dionex EGC:

- In the **Instrument** (or **Timebase**) box, select the instrument (or timebase) to which this cartridge is assigned.
- In the **Link to Pump** box, select the pump name. The EG must be linked to a pump in order to receive flow rate information. This prevents damage to the cartridge by ensuring that the EG does not operate when the pump is off or the flow rate is too low.

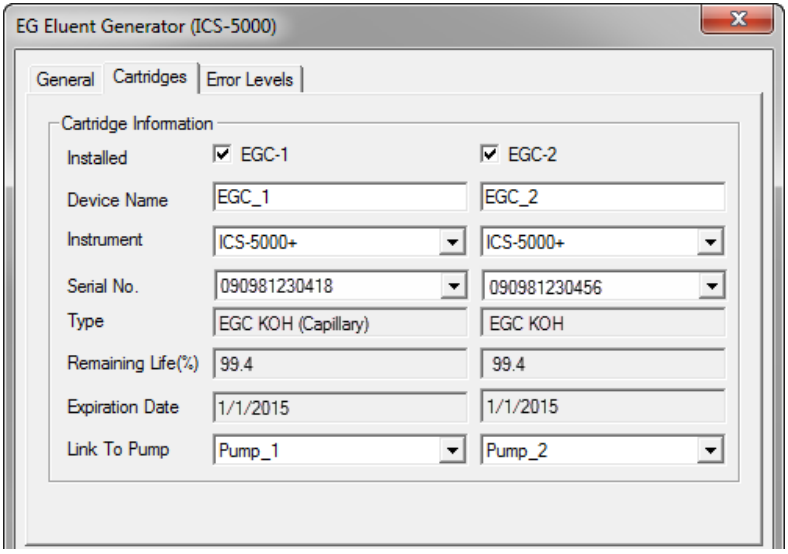


Figure 3-21. *EG Configuration Example: Cartridges Tab Page*

Capillary IC

DC Configuration Properties

On the **IC Cubes** tab page, double-click the IC Cube name. The Device Configuration dialog box appears (see Figure 3-22).

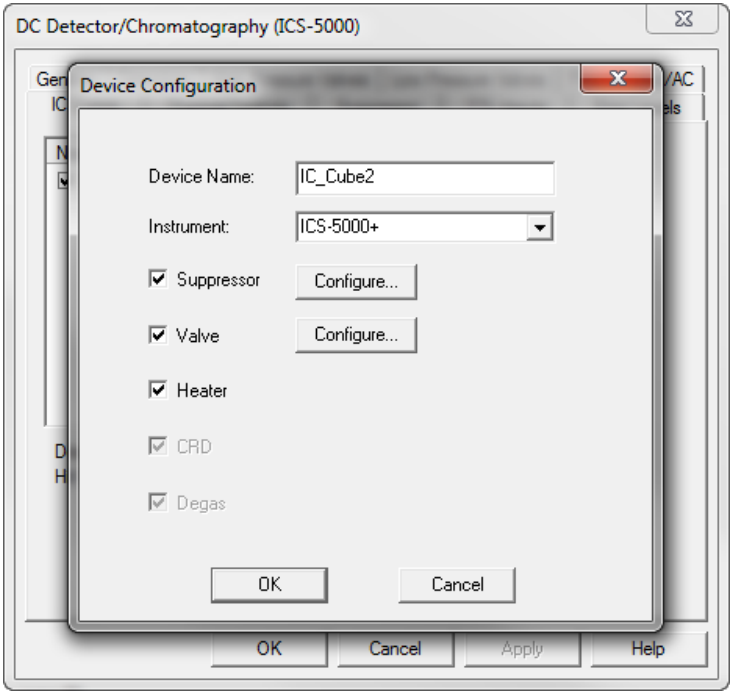


Figure 3-22. *IC Cube Configuration Example*

- Verify that the IC Cube is assigned to the correct instrument (or timebase). If a suppressor is installed, click **Configure** next to **Suppressor**. Verify that the suppressor is assigned to the correct

instrument (or timebase) and that it is linked to the pump (see Figure 3-23).

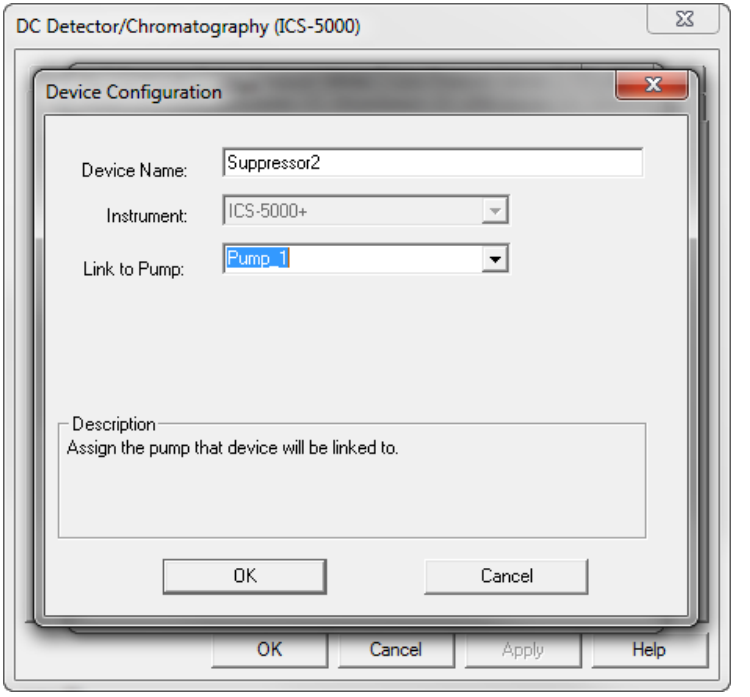


Figure 3-23. *IC Cube Suppressor Configuration Example*

- Click **Configure** next to **Valve** and verify that the IC Cube injection valve is assigned to the correct instrument (or timebase) (see Figure 3-24).

  For **Controlled by**, verify that **AS** is selected. This setting assigns control of the valve to the autosampler. Use this setting for both the Dionex AS-AP and Dionex AS-DV. If an autosampler is not installed, select **DC** in the **Controlled by** list.

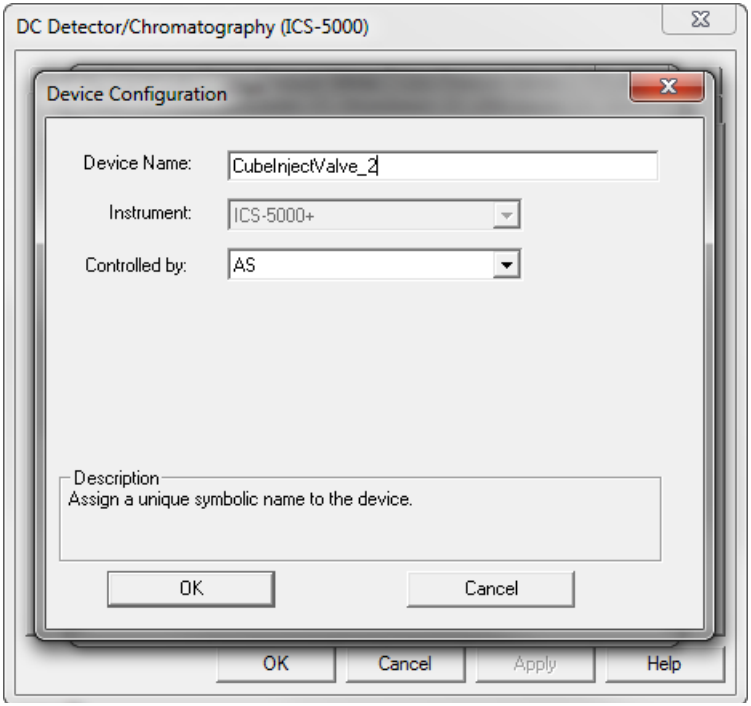


Figure 3-24. *IC Cube Valve Configuration Example*

Analytical IC

DC Configuration Properties

On the **High Pressure Valves** tab page (see Figure 3-25), under **Controlled by**, verify that **AS** is selected for InjectValve_1 (and InjectValve_2, if installed). This setting assigns control of the injection valve in the DC to the autosampler. Use this setting for both the Dionex AS-AP and Dionex AS-DV.

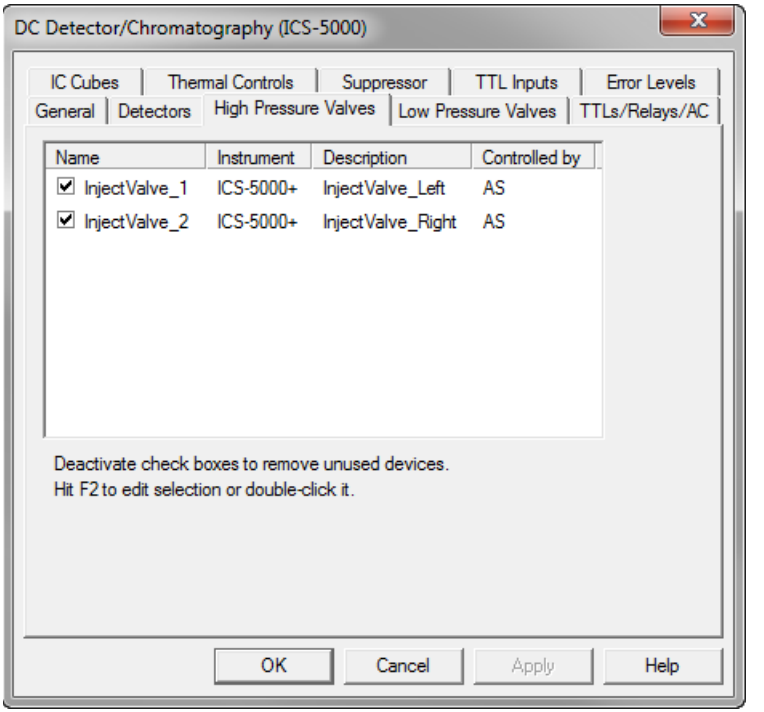


Figure 3-25. *DC High Pressure Valves Configuration Example*

If an autosampler is not installed, select **DC** for the **Controlled by** setting. To change the setting, select the injection valve name and press **F2**.

Analytical IC

TC Configuration Properties

On the **Components** tab page (see Figure 3-26):

- If the TC valve is connected to a Dionex AS-AP or Dionex AS-DV, select the **controlled by AS** check box for the valve (**Left Valve** and/or **Right Valve**). If an autosampler is not installed, clear the check box.
- For each column that has a column ID chip card installed (see Section 3.6.3), select the check box next to the column name (**Column A**, **Column B**, etc.).
- For each installed valve and column, verify that the device is assigned to the correct instrument (or timebase).

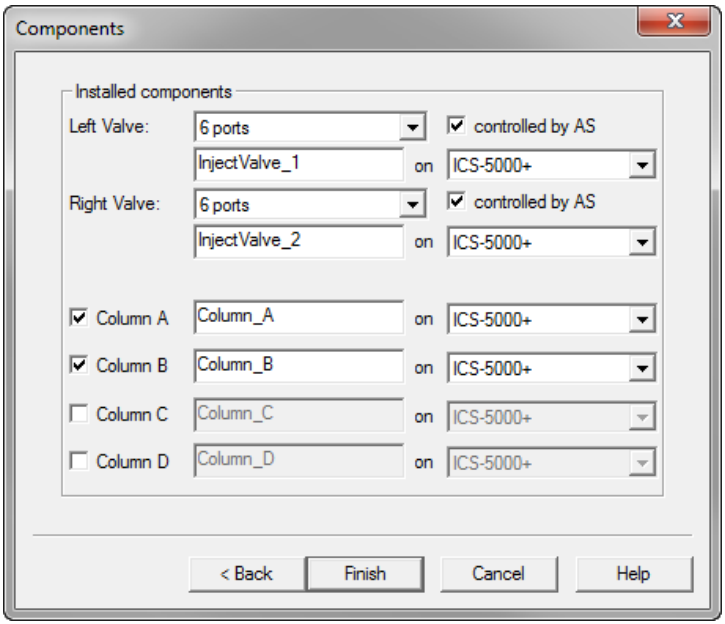


Figure 3-26. *TC Configuration Example: Components Tab Page*

After configuring all modules in Chromeleon, start the Chromeleon client (see Section 3.13).

3.9.6 Starting the Chromeleon Client

1. Start the Chromeleon client:
   - To start Chromeleon 7, click **Start > All Programs > Thermo Chromeleon 7 > Chromeleon 7**.
   - To start Chromeleon 6.8, click **Start > All Programs > Chromeleon > Chromeleon**.
2. Display the ePanel Set (Chromeleon 7) or panel tabset (Chromeleon 6.8).
   - To display the Chromeleon 7 ePanel Set, click the **Instruments** Category Bar. Chromeleon 7 connects to the instrument and displays the ePanel Set.

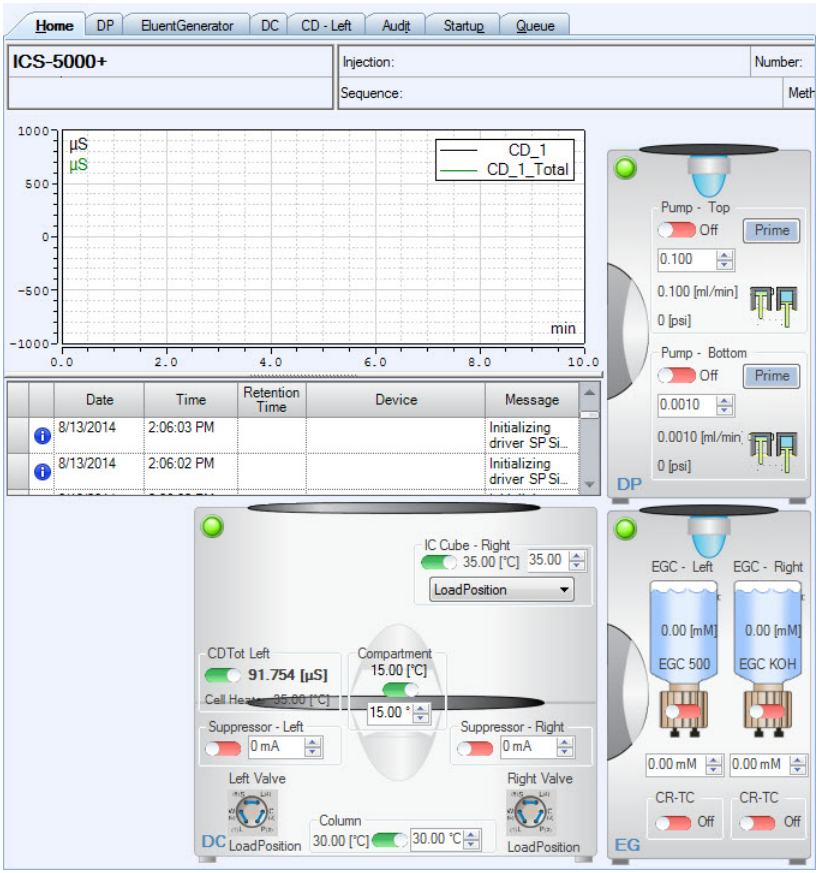


Figure 3-27. *Example Chromeleon 7 ePanel Set*

- To display the Chromeleon 6.8 panel tabset, click **View > Default Panel Tabset** or click the toolbar button to display the panel tabset.

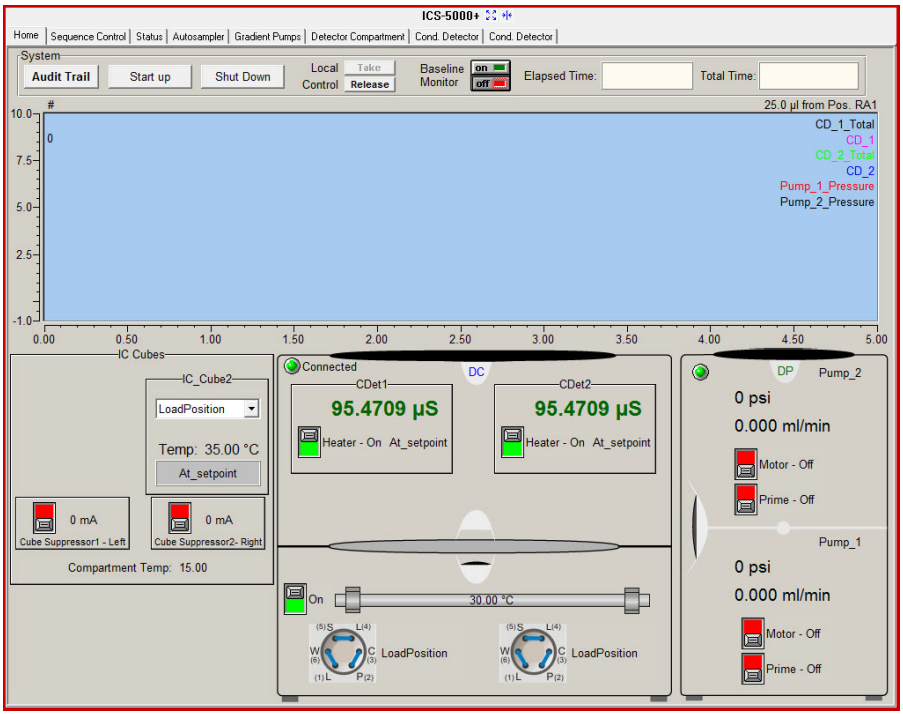


Figure 3-28. *Example Chromeleon 6.8 Panel Tabset*

3.10 Connecting Drain Lines

Any leaks or condensation that may occur are routed to the drain port on the rear of each module.

Connecting Drain Hoses to the DP/SP, EG, standard DC, and TC

1. Locate the corrugated drain hose (P/N 055075) in the Ship Kit for each module.
2. Push the hose onto the drain port on the rear of each module.

3. Place the open end of each hose into a waste container or appropriate drain.

IMPORTANT **For correct drainage, make sure drain hoses lay flat on the bench and are not bent, pinched, or elevated at any point. Do not allow the ends of the drain hoses to be submerged in waste liquid.**

Connecting a Rigid Drain Line to a Low-Temperature DC

The low-temperature DC includes parts for assembling a rigid drain line that can be routed from the drain port on the DC rear panel to either the rear, side, or front edge of the lab bench. The standard corrugated drain hose then connects to the rigid drain line and is directed to the waste container or drain.

This design prevents the drain line from being accidentally elevated or crimped as it is routed to the drain. A vent to help prevent vapor lock and improve liquid flow to the drain is also included.

1. Locate the drain line parts in the low-temperature DC Ship Kit (P/N 22171-62000) (see Table 3-3 and Figure 3-29):

Part	Part Number	Quantity
Corrugated drain hose	055075	1
PTFE tubing, 1.3 cm (0.5 in) OD, 6.5 cm (2.5 in) long	22171-30001	2
PTFE tubing, 1.3 cm (0.5 in) OD, 33.0 cm (13.0 in) long	22171-30002	3
Fitting tee, push-in, RoHS, 1.3 cm (0.5 in)	00101-06-00010	1
Fitting elbow, push-in, RoHS, 1.3 cm (0.5 in)	00101-05-00008	3
Fitting union, push-in, RoHS, 1.3 cm (0.5 in)	00101-01-00049	1
Nylon vent plug, RoHS, 1.3 cm (0.5 in)	00201-99-00406	1

Table 3-3. *Parts for the DC Drain Line*

NOTE The fittings and shorter tubing pieces are bagged together in the Ship Kit.

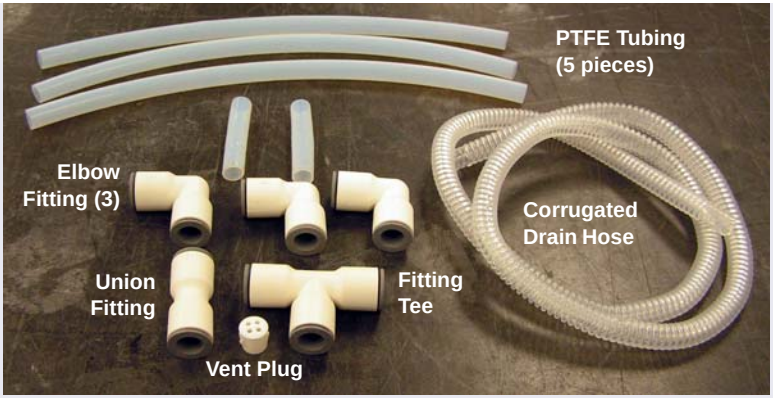


Figure 3-29. *Low-Temperature DC Drain Line Parts*

2. The drain line can be assembled in various configurations to accommodate your installation site. The figures below show some typical configurations. You can use one of these configurations or customize the assembly as required.

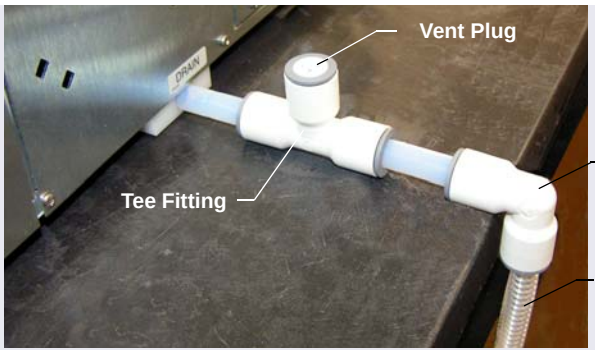


Figure 3-30. *Drain Line Routed to Rear of Bench*

Figure 3-31. *Drain Line Routed to Side of Bench*

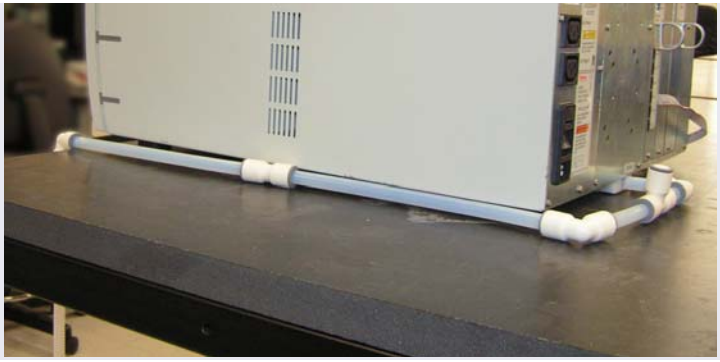


Figure 3-32. *Drain Line Routed to Front of Bench*

3. Determine how you want to route the drain line to the waste container or drain. Then, lay out parts on the bench to determine which parts will be required. Observe the following guidelines:

   - Use one of the short pieces of tubing to connect to the DC drain port.
   - Position an elbow fitting at the edge of the bench. The corrugated drain hose connects to this fitting. For stability, make sure the horizontal leg of the elbow fitting is supported on the bench.
   - Use the tee fitting in the configuration; it can be placed in any location. Install the vent plug (with the holes facing up) in the open port on the tee.

   NOTE If the supplied tubing lengths do not fit your installation site, you can cut the tubing to create the length

you need. Make sure to cut the tubing squarely to ensure a good connection between the tubing and the fittings.

4. To assemble the rigid drain line:
   a. Push the PTFE tubing into the fittings.
   b. Verify that the black o-ring inside the drain port opening on the DC is fully seated in the groove, and then push the short length of tubing straight into the drain port.

NOTE The o-ring inside the drain port ensures a leak-free fit between the drain line and drain port. If the drain line is pushed into the port at an angle, it can force the o-ring out of its groove.

5. Push the corrugated drain hose into the elbow fitting at the edge of the bench. Place the open end of the line into a waste container or appropriate drain.

IMPORTANT **For correct drainage, make sure the entire rigid drain assembly (from the DC drain port to the edge of the bench) lays flat on the bench.**

Make sure the corrugated drain hose is not bent, pinched, or elevated at any point. Do not allow the end of the drain hose to be submerged in waste liquid.

Removing a Tube from a Fitting

After a tube has been pushed fully into a fitting, it is locked in place. To remove the tube, use the fingers of one hand to press the rubber ring on the fitting and simultaneously pull out the tubing with the other hand.

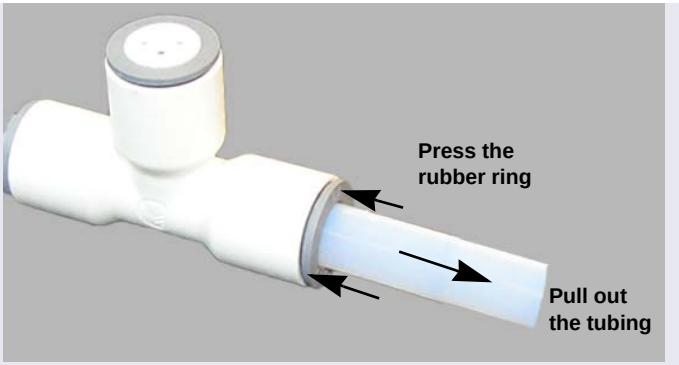


Figure 3-33. *Removal of a Drain Tube from a Fitting*

3.11 Degassing the Water

Degas the deionized water that will be used to fill the eluent reservoir. For deionized water specifications for ion chromatography, see Table 1-1.

3.12 Setting Up the Reservoirs

The following reservoirs are available for use with the DP/SP:

- 1-liter plastic reservoir (P/N 063291)
- 2-liter plastic reservoir (P/N 062510)
- 4-liter plastic reservoir (P/N 063292)

Do not use the plastic reservoirs for offline vacuum degassing of eluents. The reservoirs were not designed for this purpose.

N'utilisez pas le réservoir en plastique pour le dégazage à vide hors ligne d'éluants. Le réservoir n'a pas été conçu à cette fin.

Verwenden Sie den Plastikbehälter zum Offline Vakuum-Entgasen von Eluenten. Die Behälter sind dafür nicht ausgelegt.

IMPORTANT **Always use ASTM filtered, Type I (or better) (18 megohm-cm) deionized water that meets the specifications in Table 1-1 on page 5 to rinse reservoirs, fill reservoirs used for eluent generation or seal washing, or to manually prepare eluent.**

1. Rinse the eluent reservoir with deionized water and then fill it with degassed deionized water. This water will be used to:
   - Flush the system
   - Condition and hydrate consumable devices (EGC, CR-TC, suppressor, CRD)
   - Generate eluent (in RFIC-EG systems)

   For non-RFIC-EG systems: You can prepare the eluent for the application now or wait until after completing the system installation and the IQ. For eluent preparation instructions, refer to the manual for the column that will be installed. Column manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).
2. Place the reservoir in the Dionex ICS-5000$^+$ Eluent Organizer (EO):
   - EO with four 2-liter reservoirs (P/N 072058)
   - EO with two 2-liter reservoirs (P/N 072057)
   - EO without reservoirs (P/N 072059)

   If an EO is not available, place the reservoir in appropriate secondary containment.

3. Install an end-line filter (P/N 045987) on each reservoir's eluent line (if they are not already installed). The filters are in the pump ship kit:

Pump Ship Kit	Part Number
DP Ship Kit, Dual-Capillary	072112
DP Ship Kit, Capillary and Analytical	072111
SP Ship Kit, Capillary	072110
DP Ship Kit, Dual-Analytical	062463
SP Ship Kit, Analytical	063342

4. Thoroughly rinse the end-line filters with deionized water.
5. Install the reservoir cap, making sure the end of the line extends to the bottom of the reservoir, and that the filter is submerged in liquid. This prevents air from being drawn through the eluent lines. Hand-tighten the cap.

   NOTE A Dionex High-Pressure Inline Filter (P/N 044105) can be used to remove microparticulate matter from eluent. Connect the inline filter between the pump outlet and the eluent inlet port on the injection valve. For details, see the instructions provided with the inline filter.

6. Locate the 10 mL syringe (P/N 079803) in the pump ship kit and a luer adapter (P/N 024305) in the DC Ship Kit (standard DC, P/N 072011; low-temperature DC, P/N 22171-62000).
7. Using the syringe and luer adapter, draw water through each reservoir **ELUENT BOTTLE OUT** line to flush the line.
8. Connect the liquid lines from the DP/SP to the **ELUENT BOTTLE OUT** line of each reservoir. If an eluent line is not used, retain the cap on the end of the line.

9. The DP/SP does not require pressurized eluent reservoirs. However, Thermo Fisher Scientific recommends pressurizing reservoirs with helium or nitrogen under the following circumstances:

   - When using eluents that are sensitive to contamination.
   - When combining aqueous and nonaqueous components (for example, water and acetonitrile). Pressurizable reservoirs allow eluents to be stored under a specific atmosphere.

   NOTE If an eluent reservoir will not be pressurized, make sure that one of the ports in the reservoir cap is vented to the atmosphere.

   For instructions on how to pressurize eluent reservoirs, see Appendix A.

3.13 Setting Up the Piston Seal Wash System

Notes for DP Modules

- The seal wash system is connected to the bottom pump (pump 1) at the factory. To connect the seal wash system to the top pump (pump 2), follow the replumbing instructions in Section A.2.
- To operate a piston seal wash system for both pumps, order one of the following options. Installation instructions are included with each kit.
  - Dual-Serial External Seal Wash Kit (P/N 063518):
    After installation of this option, the DP seal wash pump will pump wash liquid from an external reservoir to pump 2, then to pump 1, and out to waste.
  - Dual-Parallel External Seal Wash Kit (P/N 068661):
    After installation of this option, wash liquid from an external reservoir is pumped through each DP pump separately.

3.13.1 Setting Up the System

1. Add ASTM Type I (or better) (18 megohm-cm) filtered and deionized water to the seal wash reservoir (P/N 064155). The liquid level should be between the **Min.** and **Max.** markers on the reservoir label. **Do not overfill the reservoir.**

2. Place the cap on the reservoir and tighten fingertight.
3. Insert the reservoir into the holder on the component panel.
4. Check that the tubing is engaged in the peristaltic pump (see Figure 3-34). If it is not, lift the lever on the peristaltic pump to the right, insert the tubing neatly between the lever and the rotor, and release the lever to secure the tubing.

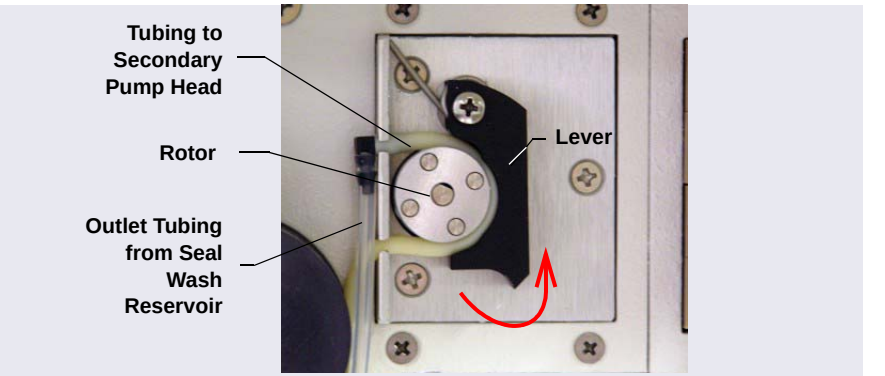


Figure 3-34. *Peristaltic (Piston Seal Wash) Pump*

3.13.2 Activating the Piston Seal Wash Function

1. Open the Chromeleon 7 ePanel Set or the Chromeleon 6.8 panel tabset.
2. Press the **F8** key to open the Command window (Chromeleon 7) or the Commands dialog box (Chromeleon 6.8).
3. Select the pump name.
4. For Chromeleon 7, click the **Properties** tab in the right pane of the window. For Chromeleon 6.8, scroll through the list of commands and properties under the pump name.
5. Select the **RearSealWashSystem** property and select the **Interval** option.
6. For Chromeleon 6.8, click the **Execute** button.

3.14 Priming the Pump

1. Before priming, check that the following tasks have been done:
   - Eluent reservoirs are filled.
   - Reservoir caps are installed and hand-tightened.
   - Liquid lines from the pump to the reservoir caps are connected.
   - Piston seal wash system is set up.
   - (Optional) Reservoirs are pressurized.
2. Place the waste line from each pump priming valve (see Figure 3-35) into a waste container or appropriate drain.
3. Open the priming valve on the secondary pump head (see Figure 3-35) by turning the knob one-half turn counterclockwise.

   NOTE If the priming valve is opened too much, air is drawn through the valve and air bubbles can be seen exiting the waste line.

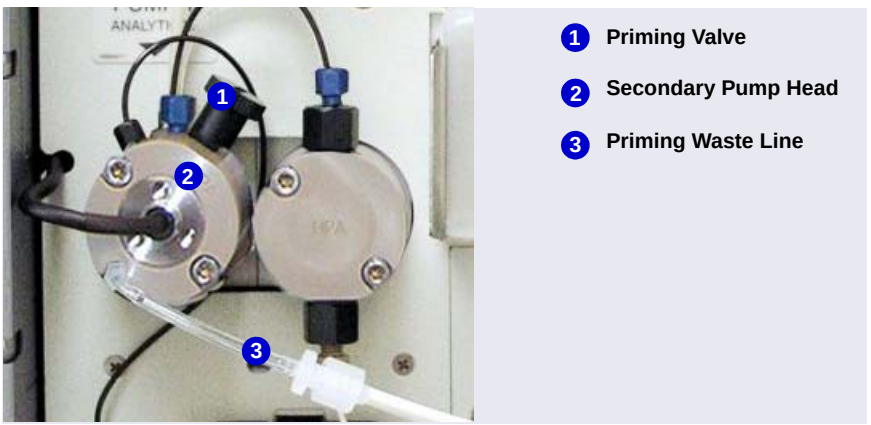


Figure 3-35. *DP/SP Priming Valve*

4. On the Chromeleon 7 ePanel Set or the Chromeleon 6.8 panel tabset, click the pump tab.
5. **Gradient pump only:** Enter 100% for the channel (A, B, C, or D) to be primed.

6. Set the **Purge Rate** to 2.0 mL/min for a capillary IC pump and 6.0 mL/min for an analytical IC pump. Set the **Duration** to 1800 s.
7. Click the **Prime** button. A warning message asks you to verify that the purge (priming) valve is open. Click **Execute despite warnings** (Chromeleon 7) or **OK** (Chromeleon 6.8). Priming starts.
8. Prime the pump until all air is purged and no air bubbles can be seen exiting the waste line. Click the **Prime** button to stop priming.

   NOTE Priming will stop automatically after the number of seconds specified in the **Duration** box is reached.

9. **Gradient pump only:** To prime additional eluent lines, select another eluent channel and repeat the priming procedure.
10. Close the priming valve by turning the knob clockwise. Tighten no more than fingertight.

IMPORTANT **Do not use any tools to tighten the priming valve! Overtightening may destroy the cap seal. Open or close the priming valve only when the system pressure is down.**

3.15 Checking the Conductivity of the Water

For a CD system, check the background conductivity of the water before continuing.

1. Connect a short piece of tubing to the CD cell inlet port.
2. Connect a luer adapter to the tubing and use a 1 mL syringe to flush fresh deionized water through the cell.

   NOTE A luer adapter is shipped with the EGC.

3. Verify that the conductivity is 1 µS or below. If the conductivity is greater than 1 µS, refill the reservoir with fresh water or use water from a different source and then recheck the conductivity.

4 • System Plumbing

This chapter provides instructions for plumbing the Dionex ICS-5000$^+$ system. Instructions for setting up and installing electrolytic devices and columns and equilibrating the system are also included.

- Instructions for plumbing a capillary IC system begin below.
- Instructions for plumbing an analytical IC system begin on page 95.

Capillary IC

4.1 Plumbing a Capillary IC System

This section describes how to plumb the components of a capillary IC system. To plumb an analytical IC system, go to Section 4.2.

Capillary IC

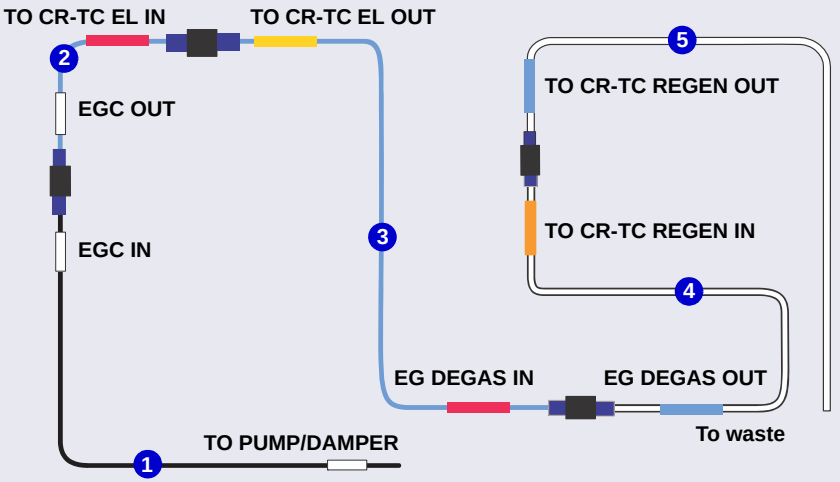
4.1.1 Tubing and Fittings

Dionex IC Cube Tubing Kit

The Dionex ICS-5000$^+$ IC Cube Ship Kit (P/N 072003) includes a Dionex IC Cube Tubing Kit (P/N 072186) for each IC Cube installed in the system. The tubing kit contains precision cut tubing and the fittings required for installing various capillary column configurations.

Pre-Assembled Tubing Chain

A pre-assembled tubing chain is included in the Dionex ICS-5000+ IC Cube Ship Kit (P/N 072003). The chain includes several lengths of tubing connected to each other with unions (see Figure 4-1). The tubing will be used to plumb the pump outlet, Dionex EGC, CR-TC, and EG degas.



1 TO PUMP/DAMPER / EGC IN
(P/N 068658) 0.25 mm (0.010 in) ID
black PEEK, 86 cm (34 in)

2 EGC OUT / TO CR-TC EL IN
(P/N 072204) 0.062 mm (0.0025 in) ID
blue PEEK, 18 cm (7 in)

3 TO CR-TC EL OUT / EG DEGAS IN
(P/N 072203) 0.062 mm (0.0025 in) ID
blue PEEK, 61 cm (24 in)

4 EG DEGAS OUT / TO CR-TC REGEN IN
(P/N 072224) 1.58 mm (0.062 in) ID
clear ETFE, 65 cm (25 in)

5 TO CR-TC REGEN OUT
(P/N 072225) 1.58 mm (0.062 in) ID
clear ETFE, 2 m (7 ft)

Figure 4-1. *Pre-Assembled Tubing Chain*

Capillary IC

4.1.2 System Plumbing Checklists

The system plumbing steps and the order in which they are performed vary slightly, depending on the installed detector. The following checklists outline the steps for each detection type.

CD System Plumbing Checklist for Capillary IC	Page
❑ Install and flush the trap column (KOH-based separations only)	page 74
❑ Connect the pump outlet	page 75
❑ Fill and flush the regenerant path	page 75
❑ Check the background conductivity	page 77
❑ Complete the IQ and system function test	page 77
❑ Complete the OQ (optional)	page 78
❑ Flush and condition the electrolytic devices	page 79
❑ Flush and install the columns	page 84
❑ Complete the plumbing	page 90
❑ Connect waste lines to the gas separator waste tube	page 116
❑ Equilibrate the system	page 118

ED System Plumbing Checklist for Capillary IC	Page
❑ Install the ED amperometry cell	page 127
❑ Connect the pump outlet	page 75
❑ Fill and flush the liquid path	page 78
❑ Flush and condition the electrolytic devices	page 79
❑ Complete the IQ and system function test	page 77
❑ Complete the OQ (optional)	page 78
❑ Flush and install the columns	page 84
❑ Complete the plumbing	page 92
❑ Connect waste lines to the gas separator waste tube	page 116
❑ Equilibrate the system	page 118

Capillary IC

4.1.3 Installing the Trap Column for KOH-Based Separations

Installation of a Thermo Scientific Dionex ASTC 500 Anion Trap Column (P/N 085359) is recommended for all KOH-based separations performed on capillary systems. The Dionex ASTC 500 trap column removes trace contaminants from deionized water. Install the trap column between the pump pulse damper and the Dionex EGC inlet.

1. Locate the trap column and the trap column tubing assembly (P/N 078497) in the IC Cube Ship Kit (P/N 072003).
2. Connect one end of the Dionex ASTC 500 tubing assembly (P/N 078497) to the pulse damper outlet (see Figure 4-2) and connect the other end to the trap column inlet.
3. (Optional) Connect a temporary waste line to the outlet of the trap column. Use the **TO CR-TC REGEN OUT** line, which is part of the pre-assembled tubing chain.
4. Set the pump **Purge** flow rate to 2.0 mL/min and the **Duration** to 1800 s. Click **Prime**. Do not open the purge valve (you can cancel the Ready Check message that appears). The trap column is flushed for 30 minutes.

   NOTE When flushing is complete, there should be no bubbles present and the effluent should be colorless.

5. On the pre-assembled tubing chain (see Figure 4-1), connect the black PEEK tubing labeled **TO PUMP/DAMPER** to the outlet of the trap column. Keep the remaining tubing in the chain connected.

Capillary IC

4.1.4 Connecting the Pump Outlet

If you did not install the Dionex ASTC 500 Anion Trap Column (see Section 4.1.3), connect the pump outlet tubing directly to the pump pulse damper.

On the pre-assembled tubing chain (see Figure 4-1), connect the black PEEK tubing labeled **TO PUMP/DAMPER** to the pump pulse damper outlet. Keep the remaining tubing in the chain connected.

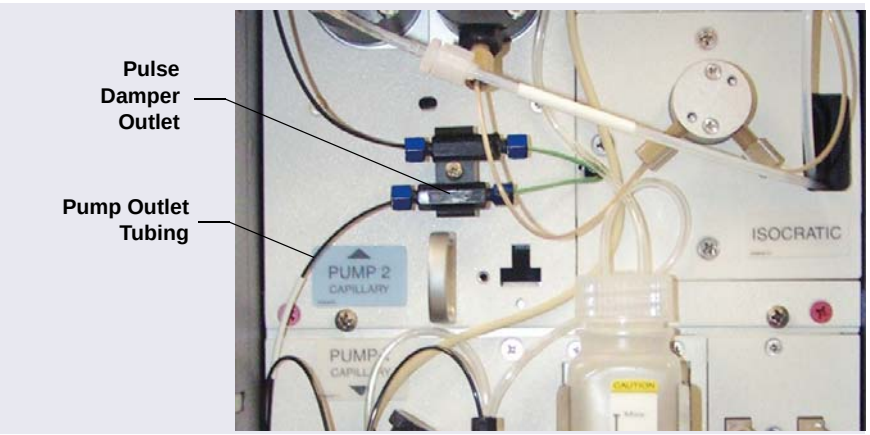


Figure 4-2. *Capillary Pump Outlet Connection*

Capillary IC

4.1.5 Filling and Flushing the CD Regenerant Path

NOTE If you are installing a system with an ED, go on to "Filling and Flushing the ED Liquid Path" on page 78.

If you are installing a system with a CD, follow the steps below to fill and flush the suppressor and CRD regenerant pathways, including the connecting path in the interior of the Dionex ICS-5000$^+$ IC Cube.

1. If you have not already done so, install the CES cartridge and CRD cartridge (if used) in the Dionex ICS-5000$^+$ IC Cube.
2. In the Dionex ICS-5000$^+$ IC Cube Tubing Kit (P/N 072186), locate the following two tubing assemblies: 65 mm (2.56 in) precision cut (P/N 072188) and 125 mm (4.92 in) precision cut, labeled **VALVE PORT 3** (P/N 072189).

3. Use the two tubing assemblies to connect the injection valve **ELUENT OUT** port to the cell **IN** port (see Figure 4-3).

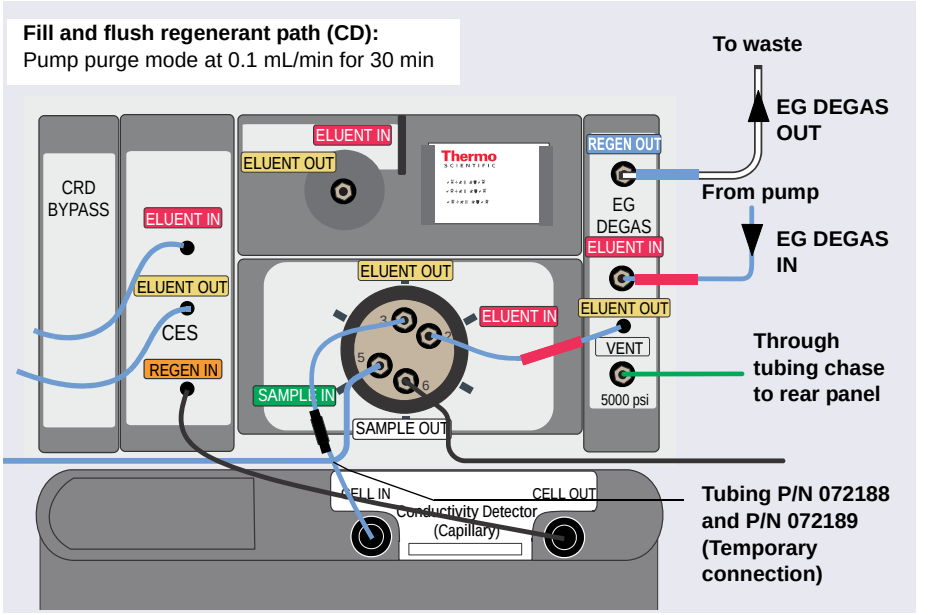


Figure 4-3. *Flow Schematic for Filling and Flushing the Regenerant path in a Capillary CD System*

4. Remove the union between the **EG DEGAS IN** and **EG DEGAS OUT** lines on the pre-assembled tubing chain (see Figure 4-1). Connect the lines to their respective ports on the EG degas cartridge.
5. Connect the **EG DEGAS ELUENT OUT** line to the injection valve **ELUENT IN** port.
6. Set the pump **Purge** rate to 0.1 mL/min and the **Duration** to 1800 s. Click **Prime**. Do not open the purge valve (you can cancel the Ready Check message that appears). The regenerant path is flushed for 30 minutes.

   NOTE The pump pressure is typically 3 to 5 MPa (400 to 700 psi) at 0.100 mL/min.

7. Monitor the waste flow from the EG degas. When no bubbles are present, the path is completely filled and flushed.

8. Check the backpressure to confirm that the regenerant path is ready:
   a. Note the pump pressure.
   b. Disconnect the CES **REGEN IN** from the CD **OUT** (the high-pressure side) and note the difference in the pump pressure.
   c. If the difference is less than 0.7 MPa (100 psi), the low-pressure flow path is ready and you can proceed to the next step.

NOTE If the pressure difference is greater than 0.7 MPa (100 psi), refer to the ICS-5000+ operator's manual for troubleshooting information on high system backpressure.

Capillary IC

4.1.6 Checking the Background Conductivity

If you are installing a CD, check the background conductivity before continuing.

1. Set the pump **Purge** flow rate to 0.03 mL/min and the **Duration** to 900 s. Click **Prime**.
2. Monitor the background conductivity. Verify that the conductivity is <1 µS before proceeding.
3. Remove the tubing assemblies between the injection valve **ELUENT OUT** and the CD **IN**.

Capillary IC

4.1.7 Completing the Installation Qualification

Complete the Installation Qualification (IQ) and system function test to confirm that the Dionex ICS-5000$^+$ system is correctly installed. For instructions, refer to *Dionex ICS-5000$^+$ System Installation Qualification* (Document No. 065404), provided in the DC Ship Kit (P/N 072011, standard DC; P/N 22171-62000, low-temperature DC).

NOTE If you are installing an ED, fill and flush the liquid path (see Section 4.1.9) and set up the eluent generator (see Section 4.1.10) before completing the IQ and performing the system function test. The test for an ED requires KOH eluent. The test for a CD requires only deionized water.

Capillary IC

4.1.8 Completing the Operational Qualification

If you purchased the Operational Qualification (OQ) option, complete the procedure now for a CD system.

For an ED system, complete the OQ after filling and flushing the liquid path, setting up the EG, and performing the system function test.

Capillary IC

4.1.9 Filling and Flushing the ED Liquid Path

IMPORTANT **Before beginning the fluidic connections, install the working electrode and the reference electrode in the cell. For instructions, see "Installing the ED Amperometry Cell" on page 127.**

1. Locate the cell inlet line and fittings in the ED Cell Inlet Tubing Kit (P/N 074221) shipped with the cell. The cell inlet line is a 23 cm (9.00 in) length of blue capillary tubing (P/N 082618).
2. Connect the cell inlet line as shown in Figure 4-4. Use the long 10-32 fitting bolt (P/N AAA-057227) and split-cone ferrule (P/N 062978) for the cell **IN** connection.

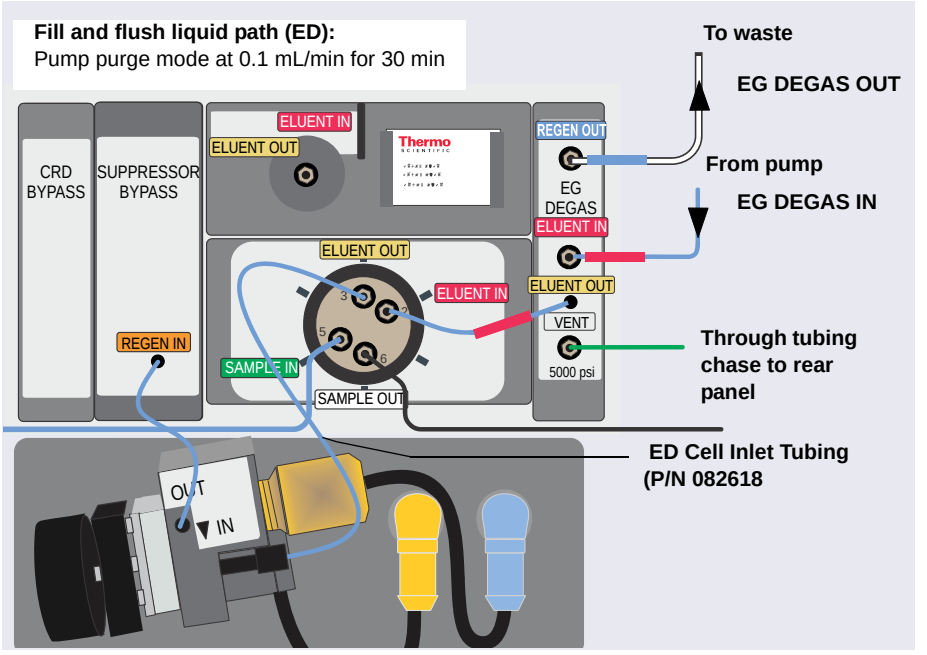


Figure 4-4. *Flow Schematic for Filling and Flushing the ED Liquid Path*

3. Remove the **EG DEGAS IN** and **EG DEGAS OUT** lines from the pre-assembled tubing chain (see Figure 4-1) and connect them to their respective ports on the EG degas cartridge.
4. Connect the EG degas **ELUENT OUT** line to the injection valve **ELUENT IN** port.
5. Set the pump **Purge** rate to 0.1 mL/min and the **Duration** to 1800 s. Click **Prime**. Do not open the purge valve (you can cancel the Ready Check message that appears). The regenerant path is flushed for 30 minutes.

   NOTE The pump pressure is typically 3 to 5 MPa (400 to 700 psi) at 0.100 mL/min.

6. Monitor the waste flow from the EG degas. When no bubbles are present, the path is completely flushed and filled.
7. Check the backpressure to confirm that the liquid path is ready:
   a. Note the pump pressure.
   b. Disconnect the Suppressor Bypass **REGEN IN** from the ED cell **OUT** (the high-pressure side) and note the difference in the pump pressure.
   c. If the difference is <0.7 MPa (100 psi), the low-pressure flow path is ready and you can proceed to the next step.

NOTE If the pressure difference is greater than 0.7 MPa (100 psi), refer to the ICS-5000$^+$ operator's manual for troubleshooting information on high system backpressure.

Capillary IC

4.1.10 Flushing and Conditioning the Electrolytic Devices

Preparing the Dionex EGC

1. Verify that the vent fitting is tightened. This prevents cartridge leaks during installation.
2. While holding the Dionex EGC with the ports on the bottom, shake the cartridge vigorously and tap it with the palm of your hand 10 to 15 times to dislodge air bubbles that may be trapped in the chamber.
3. Remove the fitting plugs from the **EGC IN** and **EGC OUT** ports.

4. Unscrew the vent fitting from the top of the cartridge and install the luer fitting shipped with the Dionex EGC. Save the vent fitting.

IMPORTANT **To ensure proper ventilation, always install the luer fitting before operation. If you need to remove the Dionex EGC from the system, re-install the vent fitting to prevent leaks.**

Flushing the Dionex EGC

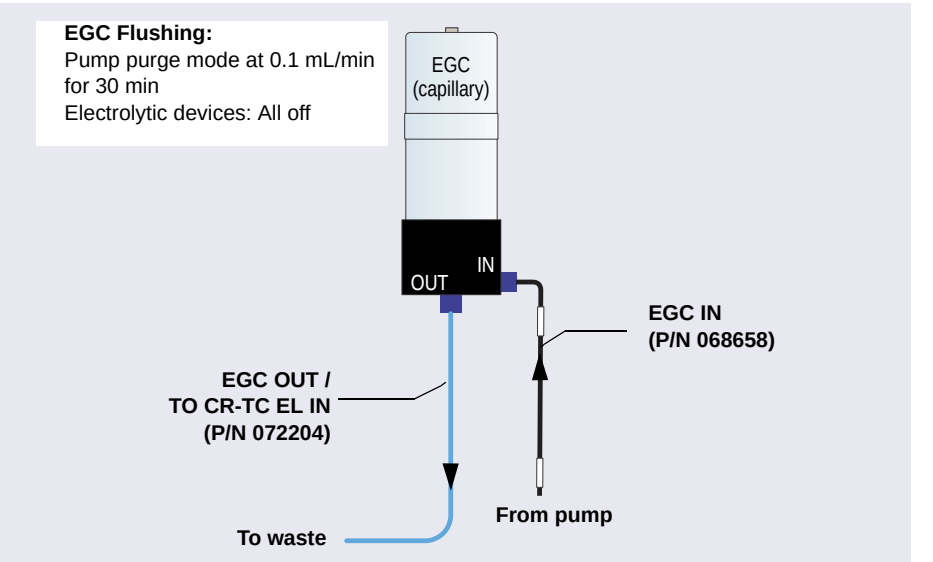


Figure 4-5. *Flow Schematic for Flushing the Dionex EGC (Capillary)*

1. Connect the **EGC IN** line to the **EGC IN** port.
2. Set the pump **Purge** rate to 0.1 mL/min and the **Duration** to 1800 s. Click **Prime**. Wait for fluid to flow from the **EGC OUT** port on the bottom of the Dionex EGC.
3. Connect the **EGC OUT** line to the **EGC OUT** port. Direct the open end of the tubing to waste. The Dionex EGC will be flushed for 30 minutes.

Conditioning the Dionex EGC

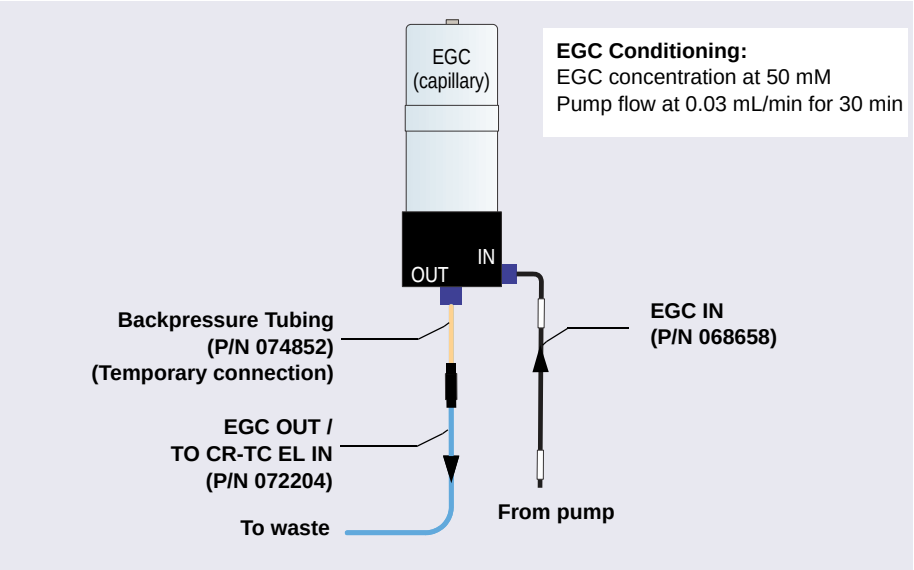


Figure 4-6. *Flow Schematic for Conditioning the Dionex EGC (Capillary)*

1. Locate the backpressure tubing (P/N 074582) in the IC Cube Ship Kit (P/N 072003) and connect it between the **EGC OUT** line and the **EGC OUT** port.
2. Set the pump **Flow** rate to 0.03 mL/min and turn on the pump.
3. Verify that the luer adapter is installed on the top of the Dionex EGC to allow venting of the Dionex EGC.

IMPORTANT **To ensure proper ventilation, always install the luer fitting on the top of the Dionex EGC before operation. If you need to remove the Dionex EGC from the system, install the vent fitting plug to prevent leaks.**

4. Set the EG concentration to 50 mM and turn on the Dionex EGC power. Verify that the Dionex CR-TC voltage is off and the suppressor current is off.
5. Condition the Dionex EGC for 30 minutes and then turn off the Dionex EGC and the pump flow.
6. Remove the backpressure tubing and reconnect the **EGC OUT** line.

Flushing the CR-TC

1. Remove the plugs from the ports on the CR-TC.
2. Connect the plumbing for flushing the CR-TC as shown in Figure 4-7. The same plumbing is also used for conditioning the CR-TC.

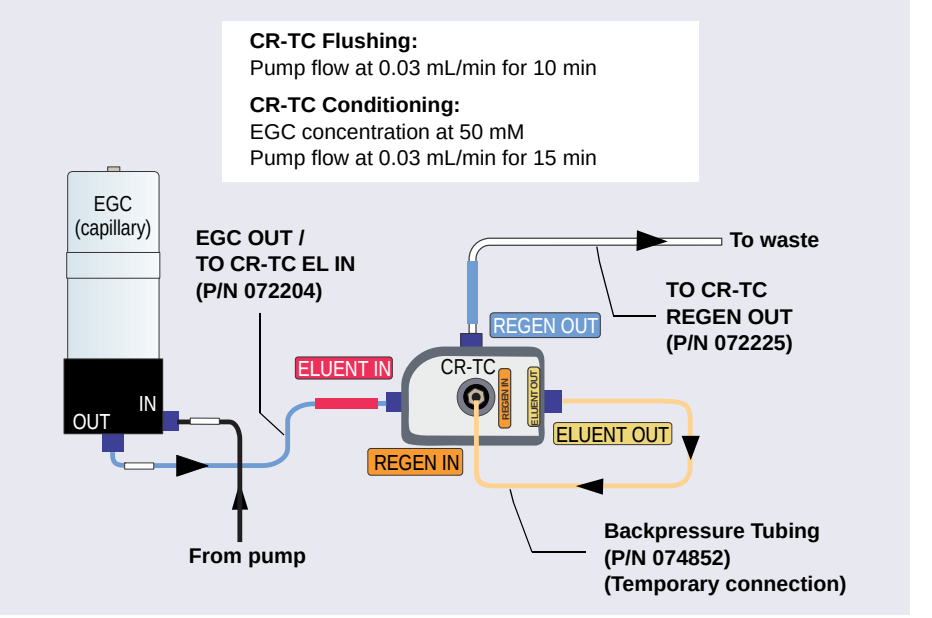


Figure 4-7. *Flow Schematic for Flushing and Conditioning the CR-TC (Capillary)*

3. In Chromeleon on the EG page, verify that the Dionex EGC current is off and the CR-TC voltage is off.
4. Set the pump **Flow** rate to 0.03 mL/min and turn on the pump. Flush the CR-TC for 10 minutes. Verify that liquid is flowing steadily from the CR-TC **REGEN OUT** line.

Conditioning the CR-TC

1. Verify that the pump **Flow** rate is 0.03 mL/min.
2. Set the EG concentration to 50 mM. Turn on the Dionex EGC current and the CR-TC voltage. Condition the CR-TC for 15 minutes. Bubbles will be present in the CR-TC **REGEN OUT** line

3. Turn off the Dionex EGC current, the CR-TC voltage, and the pump flow. Remove the backpressure tubing.

NOTE If you are installing an ED system, complete the IQ checklist, system function test, and OQ (if purchased) now.

Hydrating the Suppressor Eluent Chamber

1. Connect the plumbing for suppressor hydration as shown in Figure 4-8.

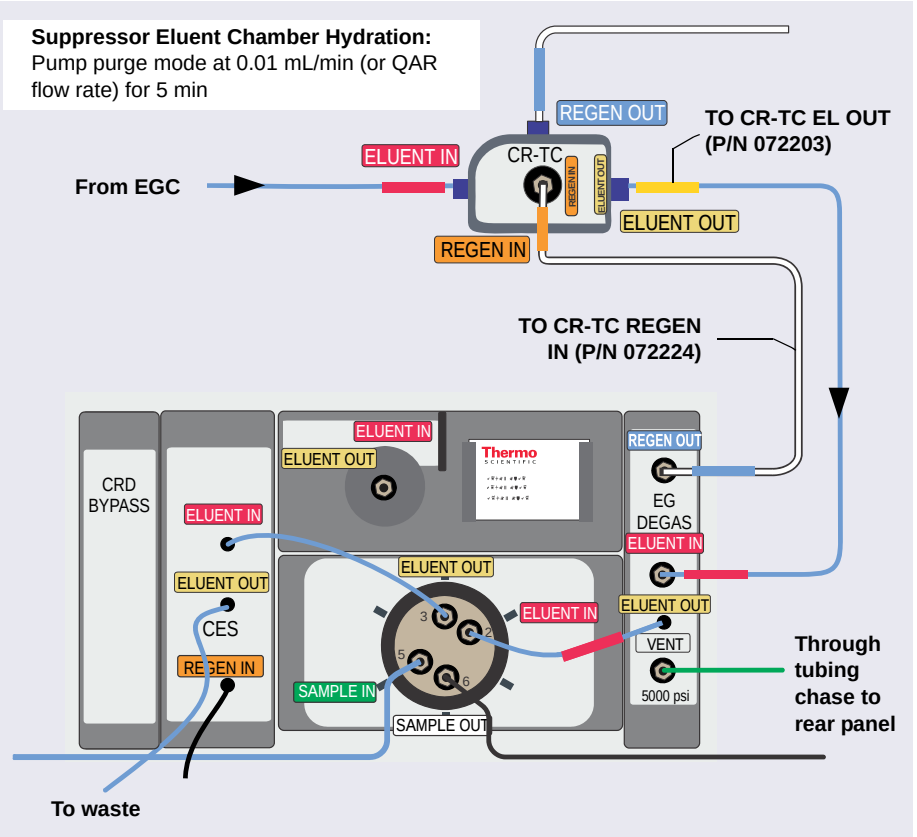


Figure 4-8. *Flow Schematic for Hydrating the Suppressor Eluent Chamber in a Capillary IC System*

NOTE If a CRD is installed, connect the **CES ELUENT OUT** line to the **CRD ELUENT IN** port and direct the **CRD ELUENT OUT** line to waste.

2. Set the pump **Purge** rate to 0.01 mL/min or select the flow rate specified in the Quality Assurance Report (QAR) shipped with the column. Set the **Duration** to 300 s and click **Prime**. Using purge mode prevents low-pressure alarms.
3. Verify that the Dionex EGC current, the CR-TC voltage, and the suppressor current are off.
4. Hydrate the suppressor eluent chamber for 5 minutes and then turn off the pump flow.
5. Disconnect the CES **ELUENT IN** line from the injection valve to remove the CES from the flow path during column flushing.

Capillary IC

4.1.11 Flushing and Installing the Columns

NOTE For detailed information about a column, refer to the column manual, included on the Thermo Scientific Reference Library DVD (P/N 053891).

Flushing the Capillary Columns

1. Locate the Dionex IC Cube Tubing Kit (P/N 072186) in the Dionex ICS-5000+ Ship Kit (P/N 075161). The kit contains precision cut tubing and the fittings required for installing various column configurations.
2. To flush the guard column (if included):
   a. Connect the 125 mm (4.92 in) precision cut tubing, labeled **VALVE PORT 3** (P/N 072189), to the **ELUENT OUT** port (3) of the injection valve. Connect the other end to the guard column.
   b. Select the flow rate specified in the Quality Assurance Report (QAR) shipped with the column and turn on the pump.
   c. Set the Dionex EGC current to the setting specified in the QAR and turn on the Dionex EGC current. Verify that the CR-TC is off.
   d. Flush the guard column to waste for 10 minutes.
   e. Connect the separator column to the guard column, using the 65 mm (2.56 in) precision cut tubing (P/N 072188).

3. To flush the separator column:
   a. If you did not install a guard column, connect the 210 mm (8.27 in) precision cut tubing, labeled **VALVE PORT 3** (P/N 072187), to the **ELUENT OUT** port (3) of the injection valve. Connect the other end to the separator column.
   b. Verify that the CR-TC is off and the pump flow and Dionex EGC are set to the conditions specified in the QAR.
   c. Flush the separator column to waste for 20 minutes.

Installing the Columns in the Capillary Column Tray

1. Temporarily disconnect the column inlet tubing from the **ELUENT OUT** port (3) of the injection valve.
2. Cut off the label from the separator column along the dotted line and slide the label into the holder on the front of the tray (see Figure 4-9).

Figure 4-9. *Capillary Column Tray with Column Label*

3. Raise the lid of the column tray to open it. Note the fitting and tubing clips on the base of the tray (see Figure 4-10). To indicate the placement of columns in the tray, labels and tubing guides are molded into the tray.

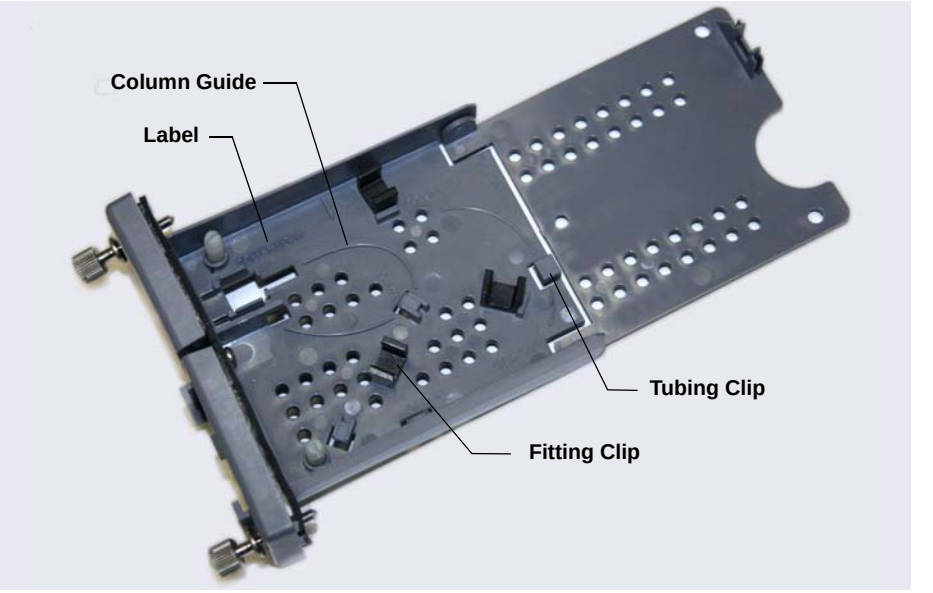


Figure 4-10. *Empty Capillary Column Tray*

4. Orient the separator column's outlet fitting with a flat side facing up and push the fitting into the opening at the front of the column tray until it stops. Press the fitting down into the clip (see Figure 4-11).

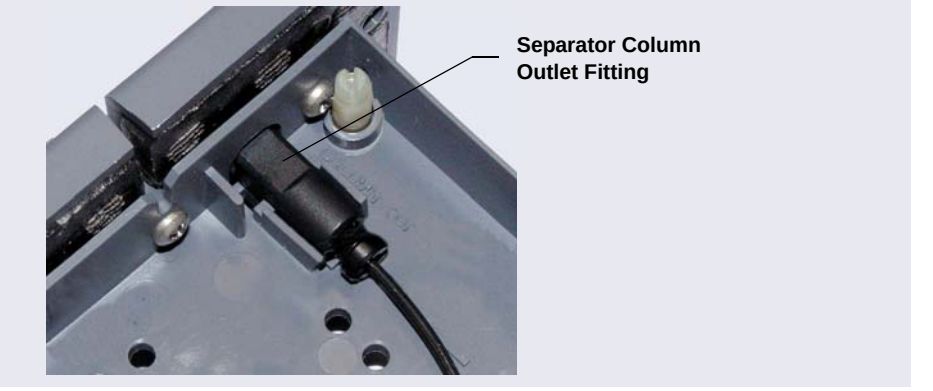


Figure 4-11. *Separator Column Outlet Fitting in Capillary Column Tray*

5. Coil the columns and precision cut tubing inside the cartridge as required for your configuration (refer to the following figures). Secure the tubing under the tubing clips and press the fittings onto the fitting clips.

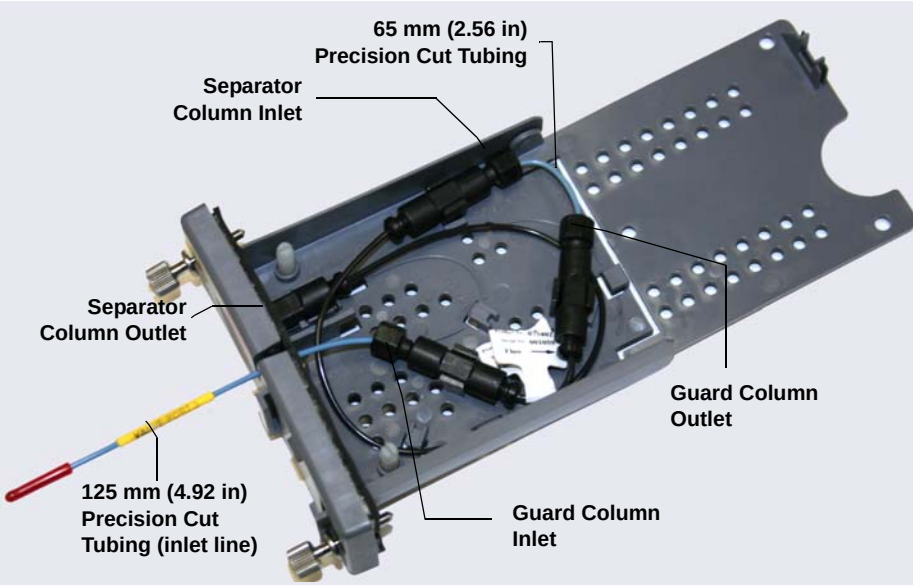


Figure 4-12. *250 mm Separator Column and 50 mm Guard Column Installed in Capillary Column Tray*

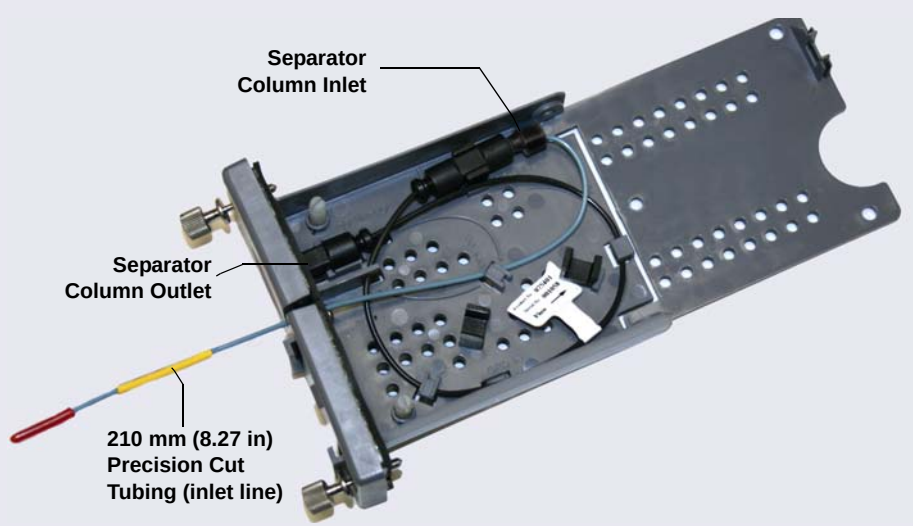


Figure 4-13. *250 mm Separator Column Installed in Capillary Column Tray*

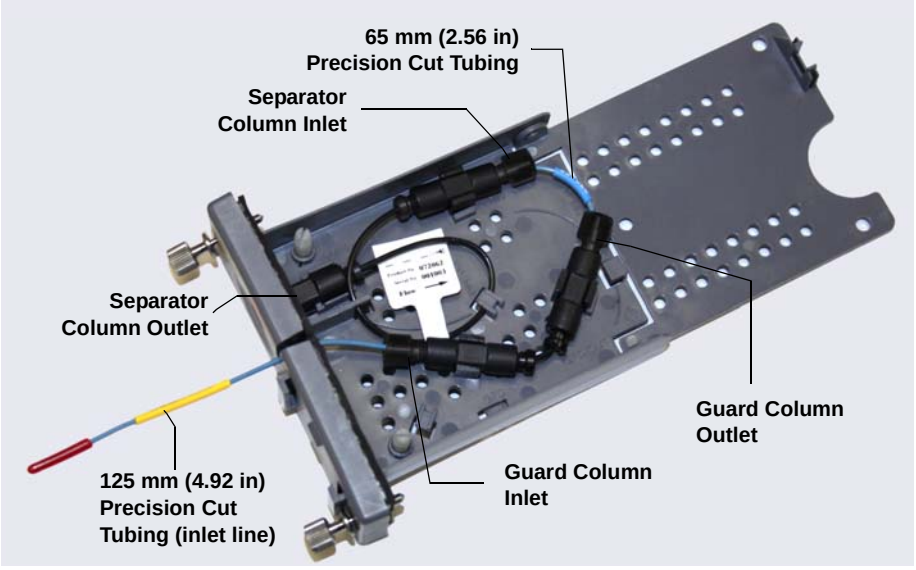


Figure 4-14. *150 mm Separator Column and 35 mm Guard Column Installed in Capillary Column Tray*

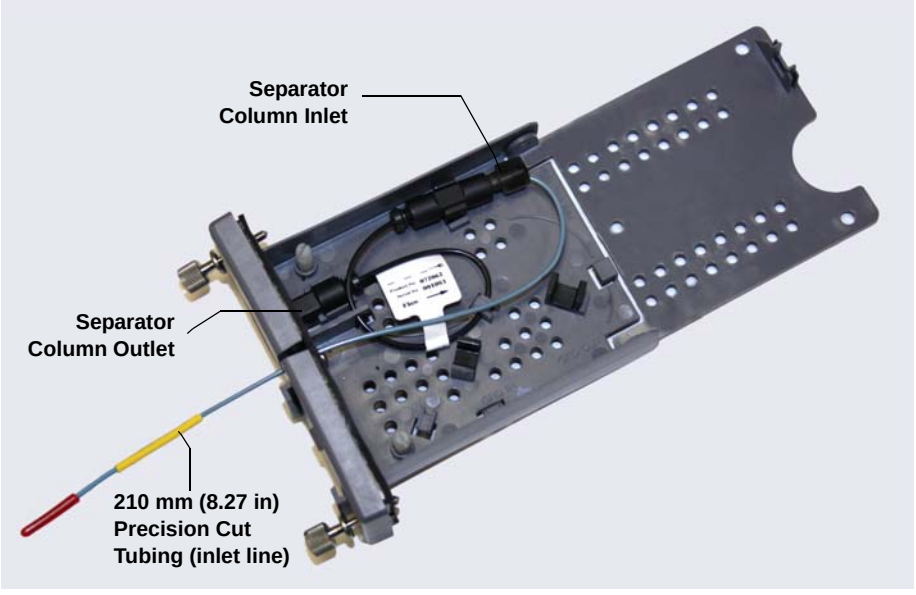


Figure 4-15. *150 mm Separator Column Installed in Capillary Column Tray*

6. Press the inlet line down into the slot on the front of the column tray and close the lid (you should hear a click).

NOTE The column tray lid should close easily. If not, do not force it. Open the lid and verify that the columns and tubing are installed correctly and secured in the clips.

7. Slide the column tray into the Dionex ICS-5000$^+$ IC Cube column heater and tighten the two thumbscrews.
8. Reconnect the column inlet tubing to the injection valve.

Capillary IC

4.1.12 Completing the Plumbing for Conductivity Detection

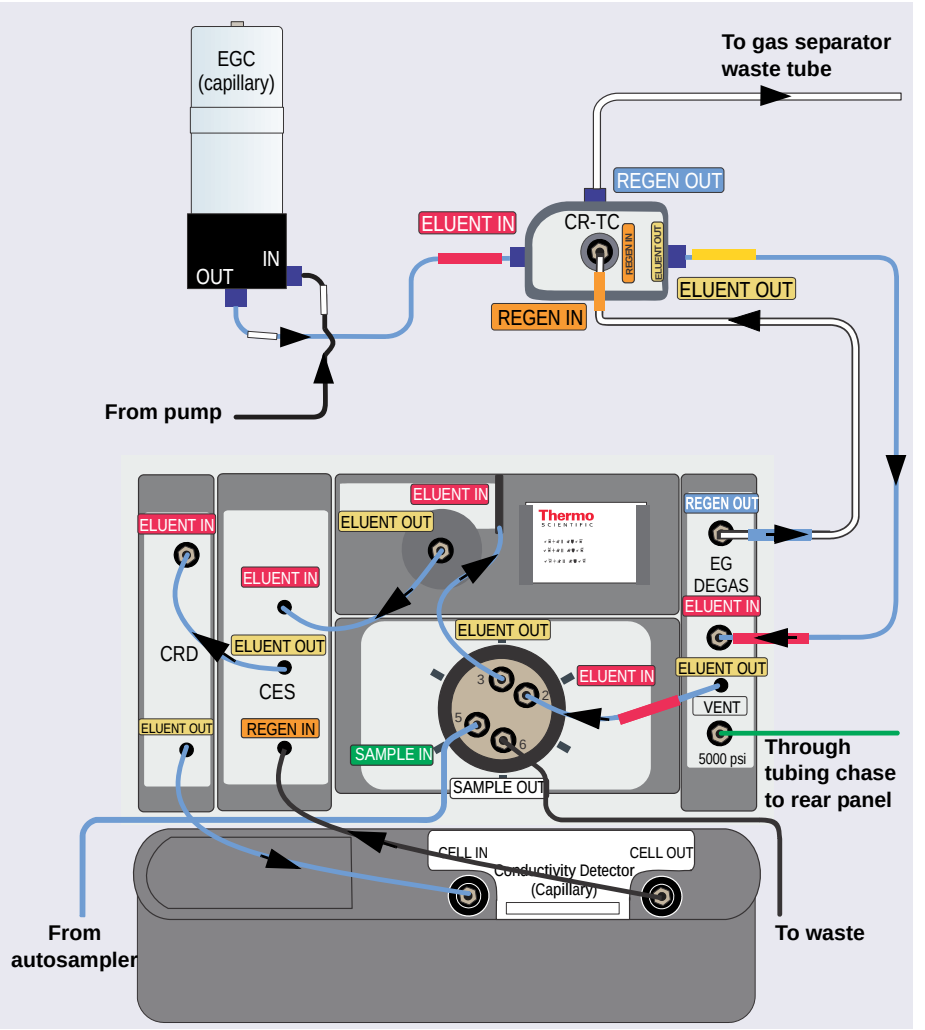


Figure 4-16. *Flow Schematic for Equilibration and Operation of a Conductivity Detection System with a CRD Installed*

1. Connect the CES **ELUENT IN** line to the column **ELUENT OUT** port (see Figure 4-16).
2. If a CRD is installed, connect the CES **ELUENT OUT** line to the CRD **ELUENT IN** port and connect the CRD **ELUENT OUT** line to the CD **IN** port.

If a CRD is not installed, connect the CES **ELUENT OUT** line to the CD **IN** port.

3. Connect the waste line from the CR-TC **REGEN OUT** port to the gas separator waste tube (see Section 4.3).
4. Route the IC Cube tubing as described in Section 4.1.14. The flow path is ready for equilibration (see Section 4.4).

Capillary IC

4.1.13 Completing the Plumbing for Electrochemical Detection

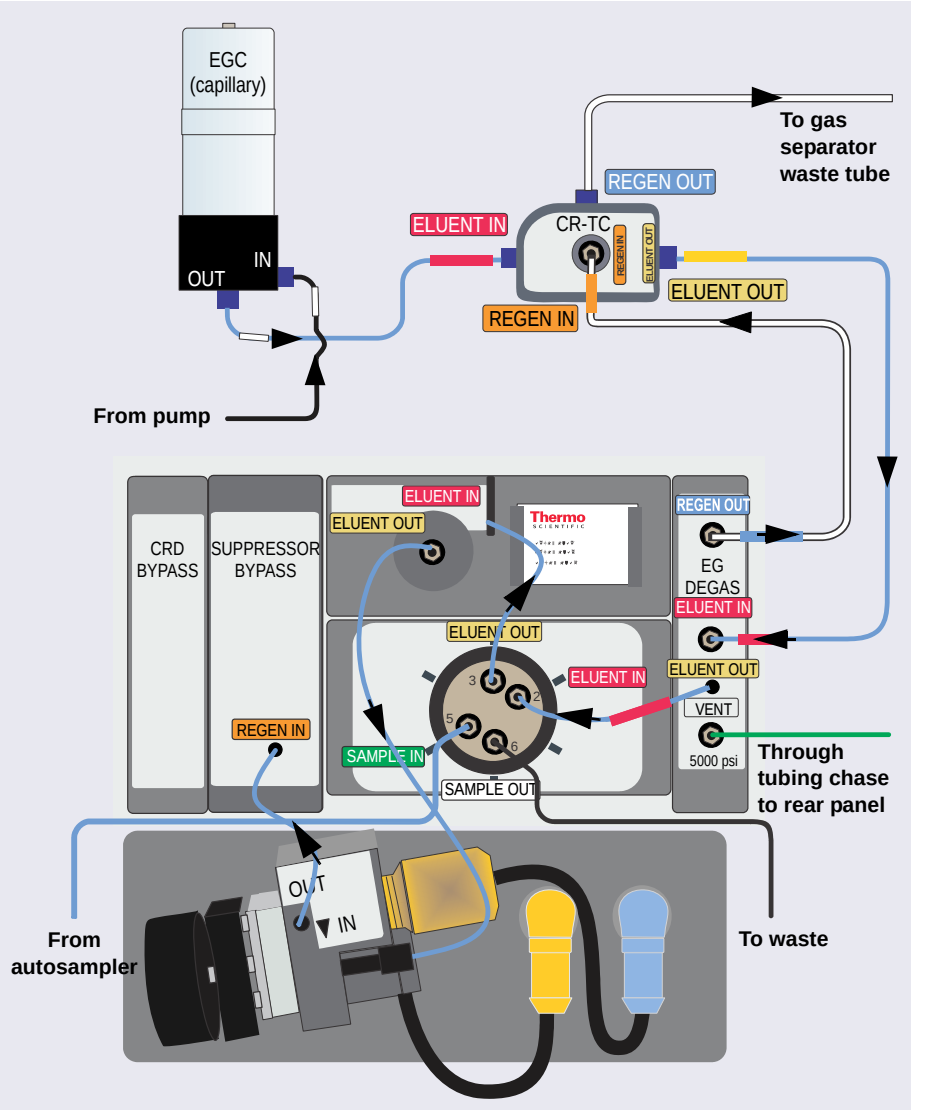


Figure 4-17. *Flow Schematic for Equilibration and Operation of a Electrochemical Detection System (Final Flow Path)*

1. Connect the cell inlet line (P/N 082618) to the column **ELUENT OUT** port (see Figure 4-17).

2. Connect the Suppressor Bypass **REGEN IN** line to the ED cell **OUT** port.
3. Connect the waste line from the CR-TC **REGEN OUT** port to the gas separator waste tube (see Section 4.3).
4. Route the IC Cube tubing as described in Section 4.1.14.

   The flow path is ready for equilibration (see Section 4.4).
5. If you are using a PdH reference electrode, follow the instructions in the next section to condition the electrode before equilibrating the system.

Conditioning the PdH Reference Electrode

Condition the PdH reference electrode after plumbing the cell.

1. On the Chromeleon 7 ePanel Set or Chromeleon 6.8 panel tabset, select the following settings:
   a. Pump panel: Set the pump flow rate to 0.01 mL/min. This turns on the pump flow, also.
   b. Eluent Generator panel: Enter 100 mM in the **Target Concentration** field. This turns on the power to the Dionex EGC, also.
   c. Verify that eluent is exiting the cell.
   d. ED panel: Set the reference electrode mode to **PdH**.
   e. Select DC amperometry mode, set the cell voltage to 0.000 V and turn on the cell voltage. Switch to integrated amperometry mode and select the PdH-referenced carbohydrate waveform.
2. Condition the electrode for 1 hour at these settings.
3. Turn off the pump flow. This turns off the Dionex EGC power and the cell voltage.

4.1.14 Routing the IC Cube Tubing

1. For a neater appearance, and to ensure that the DC doors close properly, route tubing that connects to other modules through the appropriate side slots on the DC and the other modules.

2. Route tubing inside the DC through the tubing trays below the IC Cube (see Figure 4-18):

   a. Press the sample in and sample out lines from the injection valve into the tubing tray on the front of the IC Cube and then route the lines through the DC left-side slot to the autosampler.

Figure 4-18. *IC Cube Tubing Trays (System #2 of Dual System Shown)*

   b. If you are installing a dual system:

   - Press the sample in and sample out lines from both valves into the tubing trays and then route all four lines through the DC left-side slot to the autosampler (see Figure 4-19).
   - Press the **Eluent In** line from the EG degas cartridge of system #1 into the tubing trays below the IC Cube of system #2 and then route the line out the DC right-side slot to the EG.

Figure 4-19. *Completed IC Cube Plumbing for a Dual Conductivity Detection System*

Analytical IC

4.2 Plumbing an Analytical IC System

4.2.1 Tubing and Fittings

One tubing package with precut and labeled tubing (either microbore or standard bore) is included for each system configured in the ICS-5000$^+$ (see Table 4-1). The tubing is used for plumbing the columns, detector cell, suppressor, and system waste. Tubing and fittings for plumbing an injection valve waste line are also included in each package.

Before connecting each piece of tubing, remove the unions that connect the tubing in the tubing package. Use tubing with white labels for system 1 (left side) and tubing with blue labels for system 2 (right side).

Plumbing Configuration	System Number	Color of Tubing Labels	Part Number
Microbore	1	White	062035
	2	Blue	062036
Standard Bore	1	White	AAA-062031
	2	Blue	062062

Table 4-1. *System Tubing Packages*

Tubing and fittings for other connections (for example, the pump and Dionex EGC outlet lines) are provided in the module ship kits.

- 0.25 mm (0.010 in) ID black PEEK tubing (P/N 052306) is provided for standard bore systems
- 0.125 mm (0.005 in) ID red PEEK tubing (P/N 052310) is provided for microbore systems

Analytical IC

4.2.2 System Plumbing Checklists

The system plumbing steps and the order in which they are performed vary slightly, depending on the installed detector. The following checklists outline the steps for each detection type.

CD System Plumbing Checklist for Analytical IC	Page
❑ Plumb the static mixer or trap column	page 96
❑ Complete the IQ checklist	page 98
❑ Perform the system function test	page 99
❑ Complete the OQ (optional)	page 99
❑ Plumb the EG	page 99
❑ Plumb the DC	page 110
❑ Plumb the TC	page 114
❑ Connect waste lines to the gas separator waste tube	page 116
❑ Equilibrate the system	page 118

ED System Plumbing Checklist for Analytical IC	Page
❑ Plumb the static mixer or trap column	page 96
❑ Plumb the EG	page 99
❑ Complete the IQ checklist	page 98
❑ Perform the system function test	page 99
❑ Complete the OQ (optional)	page 99
❑ Install the ED amperometry cell	page 127
❑ Plumb the DC	page 110
❑ Connect waste lines to the gas separator waste tube	page 116
❑ Equilibrate the system	page 118

Analytical IC

4.2.3 Plumbing the Static Mixer or Trap Column

A static mixer is mounted on the pump component panel at the factory and the inlet of the static mixer is pre-plumbed to the pump outlet. In addition, several high-pressure trap columns are available for use with the Dionex ICS-5000+ system. When a trap column is used, it replaces the static mixer.

Plumbing the Static Mixer

1. Cut an 86 cm (34 in) piece of 0.25 mm (0.010 in) ID black PEEK tubing.
2. Connect the tubing to the static mixer outlet (see Figure 4-20).

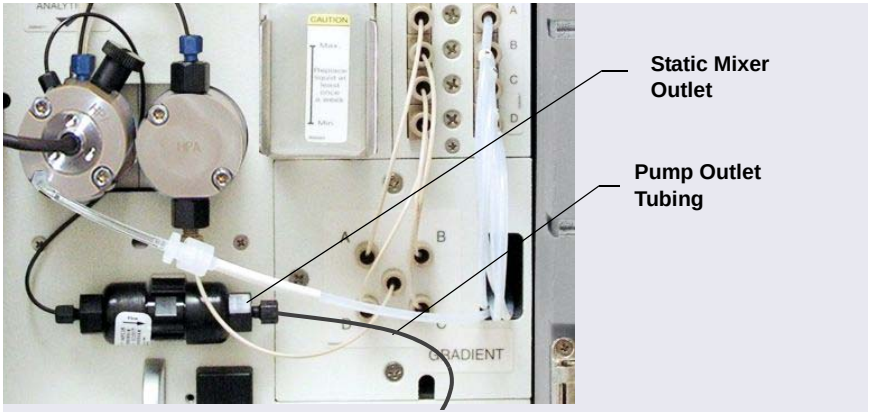


Figure 4-20. *Analytical Pump Outlet Connection*

Installing a Trap Column

Before installing a trap column, refer to the trap column manual for conditioning, equilibration, or plumbing details required for your application. The column manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

1. Remove the static mixer from the mounting clip on the component panel (see Figure 4-20).
2. Remove the plugs from the trap column inlet and outlet. Install the plugs in the inlet and outlet of the static mixer. Set the mixer aside.
3. For a Dionex MFC 500 (P/N 079017): Connect the tubing from the secondary pump head to the trap column inlet and press the trap column into the mounting clip (P/N 064552) on the component panel.

4. For a Dionex ATC 500, ATC-HC 500, ATC-HC Borate, or CTC 500:

   a. Locate the mounting clip required for your column in the pump ship kit.

Thermo Scientific High-Pressure Trap Column	Use This Mounting Clip ...
Dionex ATC 500, 2 mm (P/N 079018) Dionex CTC 500, 2 mm (P/N 079019)	Dual-component clip (P/N 074010)
Dionex ATC 500, 4 mm (P/N 075976) Dionex CTC 500, 4 mm (P/N 075977)	Component clip (P/N 075985)
Dionex ATC-HC 500 (P/N 075978) Dionex ATC-HC 500 Borate (P/N 075979)	Component clip (P/N 075985)

   b. Remove the screw and mounting clip used to secure the static mixer to the component panel. Attach the mounting clip for the trap column to the component panel, using the screw from the mixer clip.

   NOTE When using a dual-component clip, you can install the trap column in either set of clips.

   c. Connect the tubing from the secondary pump head to the trap column inlet and press the trap column into the mounting clip.

5. Cut an 86 cm (34 in) piece of 0.25 mm (0.010 in) ID black PEEK tubing (for standard bore systems) or 0.125 mm (0.005 in) ID red PEEK tubing (for microbore systems).

6. Connect the tubing to the trap column outlet.

7. Store the static mixer (and its mounting clip, if removed) for future use.

Analytical IC

4.2.4 Completing the IQ Checklist

Complete the Installation Qualification (IQ) checklist to confirm that the Dionex ICS-5000+ system is correctly installed. For instructions, refer to *Dionex ICS-5000+ System Installation Qualification* (Document No. 065402), provided in the DC Ship Kit (P/N 072011, standard DC; P/N 22171-62000, low-temperature DC).

NOTE If you are installing an ED, set up the eluent generator (see Section 4.2.5) before completing the IQ checklist and performing the system function test. The test for an ED requires KOH eluent. The test for a CD requires only deionized water.

Analytical IC

4.2.5 Performing the System Function Test

Complete the system function test to verify that the basic system components (injection valve, pump, and detector) are functioning correctly. For instructions, refer to *Dionex ICS-5000$^+$ System Installation Qualification* (Document No. 065402), provided in the DC Ship Kit (P/N 072011, standard DC; P/N 22171-62000, low-temperature DC).

Analytical IC

4.2.6 Completing the Operational Qualification

If you purchased the Operational Qualification (OQ) option, complete the procedure now for a CD system. For an ED system, complete the OQ after plumbing the EG.

Analytical IC

4.2.7 Plumbing the EG for Analytical IC Applications

Refer to the Dionex EGC and CR-TC manuals for the optimal operating conditions for your application. The manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

NOTE The Dionex EGC-CO_3 EGC and Thermo Scientific Dionex EPM Electrolytic pH Modifier require specialized procedures for installation and conditioning. For details, refer to the product manuals. The manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

For an illustration of the liquid flow path through the EG components after all conditioning and plumbing connections are complete, see Figure 4-21 (for standard-pressure analytical systems) or Figure 4-22 (for high-pressure analytical systems).

NOTE Some RFIC systems require a backpressure coil. If the system pressure is below 14 MPa (2000 psi) at system equilibration (see Section 4.4), install a backpressure coil between the

injection valve and the **ELUENT OUT** port on the Dionex EGC (see Section 4.4.1).

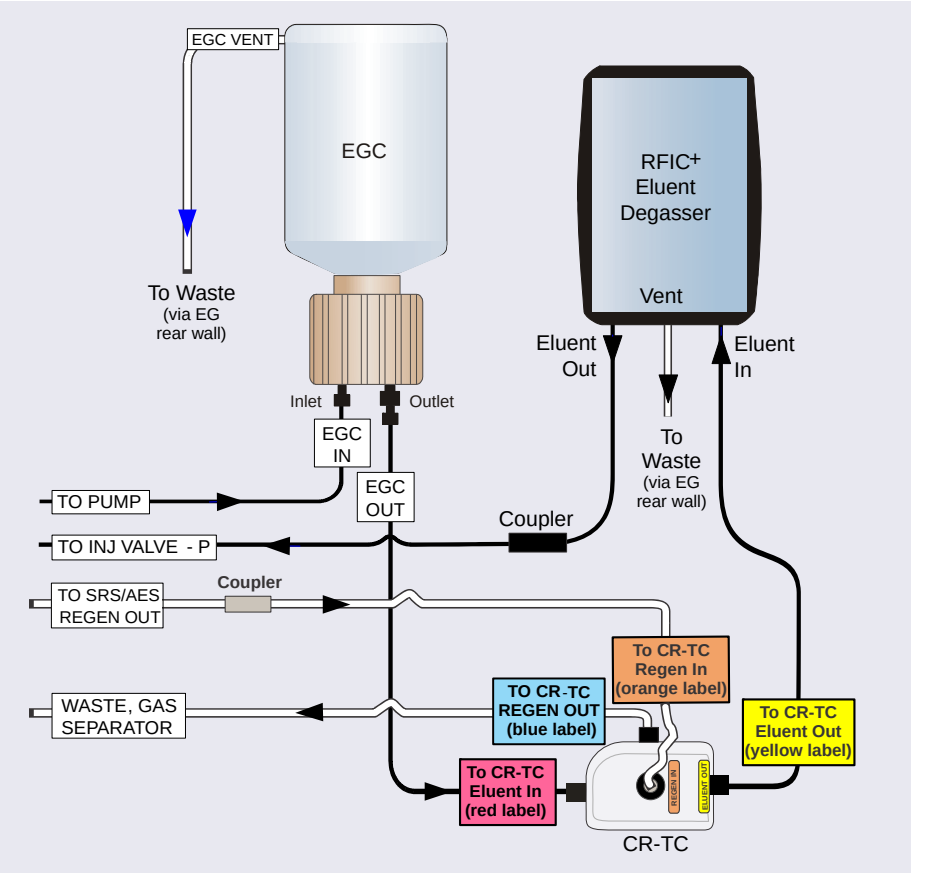


Figure 4-21. *EG Flow Schematic: Analytical (Standard-Pressure) Flow Version*

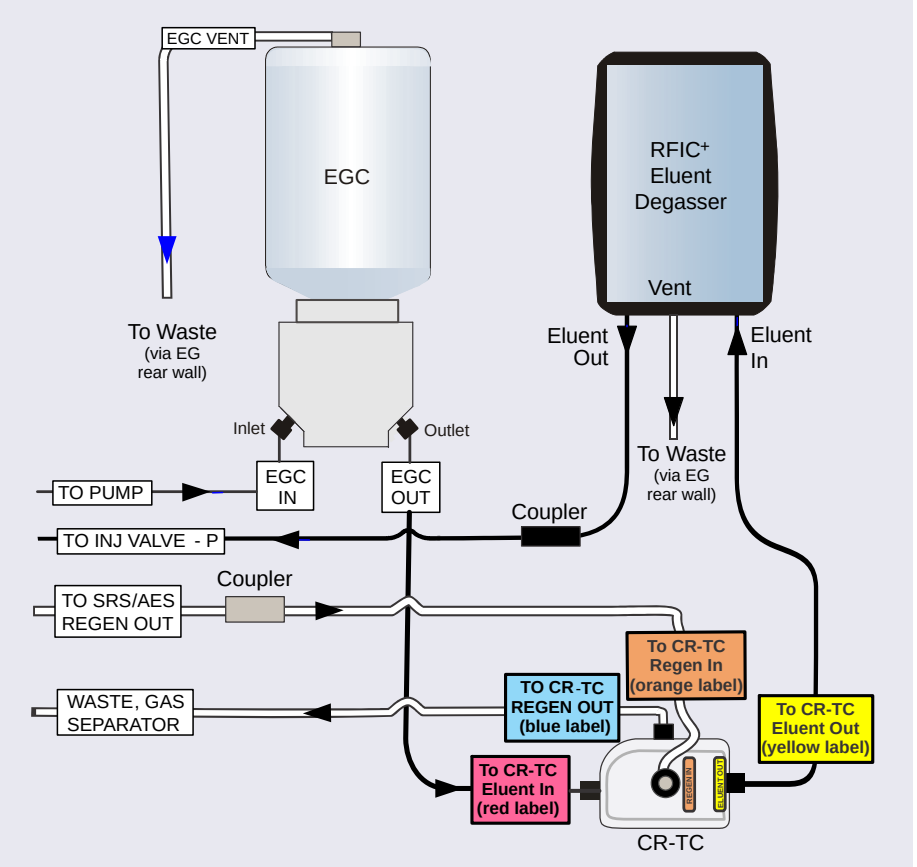


Figure 4-22. *EG Flow Schematic: Analytical (High-Pressure) Flow Version*

Analytical IC

Installing the Eluent Generator Cartridge (Dionex EGC)

1. Open the EG door.
2. Push down on the slide release latch and pull the tray forward until it reaches the stop.

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

La cartouche de 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-Kartusche enthält eine korrosive Base (KOH, LiOH oder NaOH), eine korrosive Säure (MSA) oder eine konzentrierte K_2CO_3-Lösung. Tragen Sie daher beim Umgang mit der Kartusche eine Schutzbrille und Handschuhe.

3. Verify that a 10-32 plug (standard-pressure Dionex EGC) or a fitting (high-pressure Dionex EGC) is installed in the Dionex EGC vent opening (see Figure 4-23). This prevents leakage from the vent opening when you turn over the cartridge.

Figure 4-23. *Dionex EGC Vent Opening*

4. Turn the Dionex EGC upside down and place it on the EG drip tray (see Figure 4-24). This is the “service position” for the cartridge.

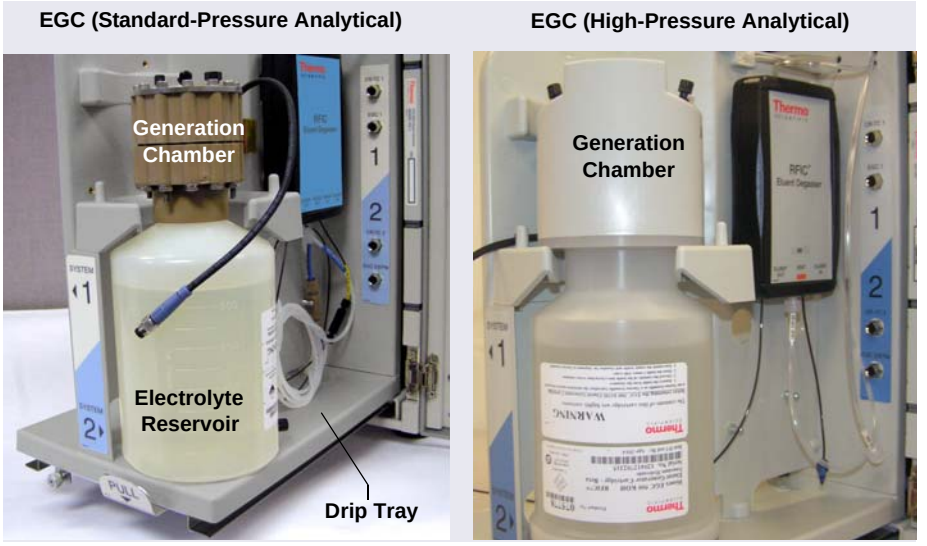


Figure 4-24. *Dionex EGC Service Position*

5. Remove the plugs from the **INLET** and **OUTLET** fittings (see Figure 4-25).

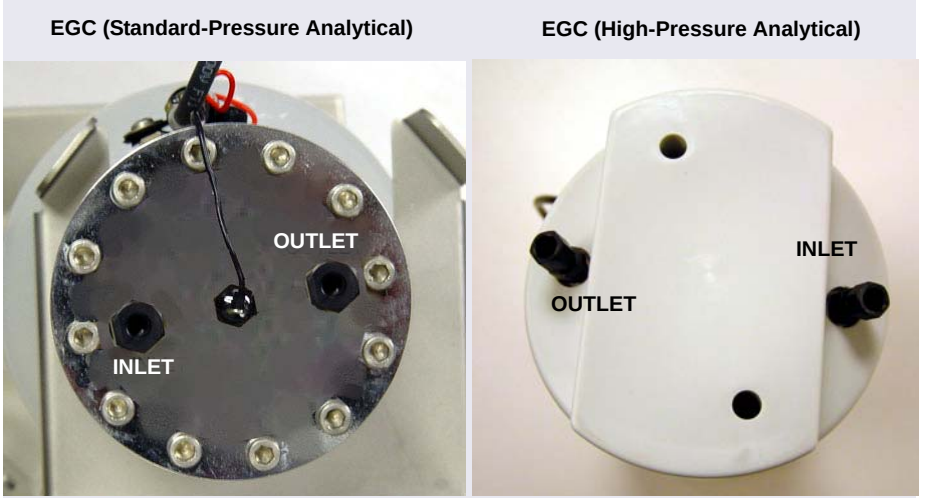


Figure 4-25. *Dionex EGC Inlet and Outlet Fittings with Plugs*

6. Connect the outlet line from the pump to the Dionex EGC **INLET** port.
7. Connect the line from the **ELUENT IN** port of the Dionex RFIC+ Eluent Degasser to the Dionex EGC **OUTLET** port (see Figure 4-28). This is a temporary connection.
8. Turn over the Dionex EGC (fittings facing down). Shake the cartridge vigorously and tap it with the palm of your hand 10 to 15 times to dislodge any air bubbles trapped in the eluent generation chamber.

   NOTE Be sure to dislodge air bubbles each time the Dionex EGC has been turned upside down.

9. Slide the Dionex EGC into the cartridge holder in the EG.
10. Remove the 10-32 plug from the vent opening on the side of the standard-pressure Dionex EGC or remove the fitting from the top of the high-pressure Dionex EGC. Install a 10-32 luer adapter (P/N 063517) in the opening. The luer adapter is shipped with the cartridge. Remove the luer cap.

    NOTE Store the 10-32 plug or fitting in a safe place. The plug or fitting is required when shipping or storing the cartridge.

11. Push the Dionex EGC electrical cable firmly onto the **EGC 1** (or **EGC 2**) bulkhead connector (see Figure 4-26). Twist the ring on the cable connector fingertight to secure it.

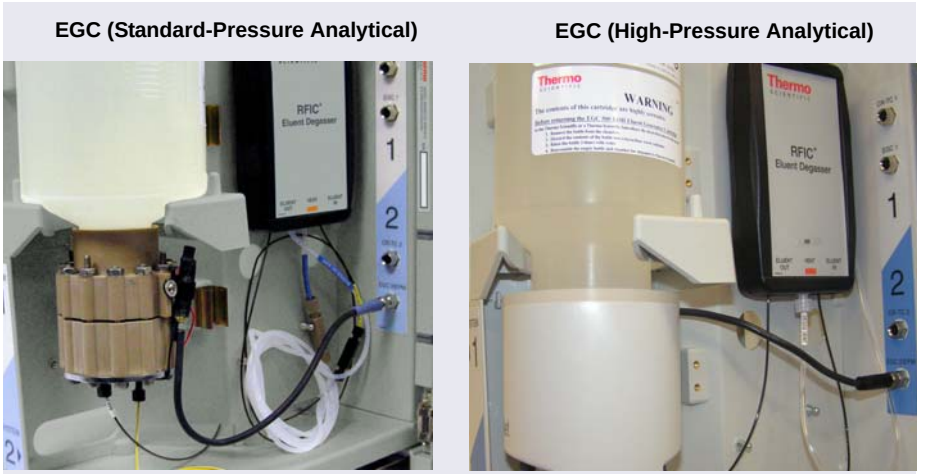


Figure 4-26. *Connecting the Dionex EGC Electrical Cable*

12. Pull the line labeled **EGC VENT** through the opening in the rear wall (above the bulkhead connectors) and connect the line to the luer adapter in the Dionex EGC vent opening (see Figure 4-27).

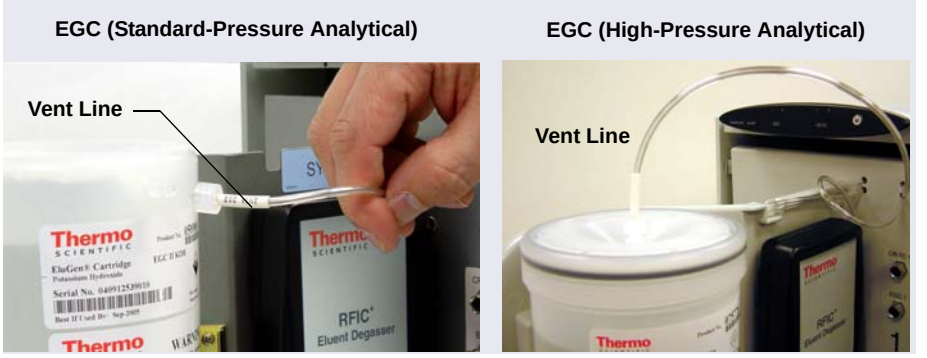


Figure 4-27. *Dionex EGC Vent Opening*

IMPORTANT **The vent line must be connected to the Dionex EGC to ensure proper ventilation.**

Analytical IC

Flushing and Conditioning the Dionex EGC

1. Locate the yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil (P/N 053765) in the EG Ship Kit (P/N 072047).
2. Connect the coil to the **ELUENT OUT** port of the RFIC+ Eluent Degasser (see Figure 4-28). Direct the open end to a waste container. This is a temporary connection.

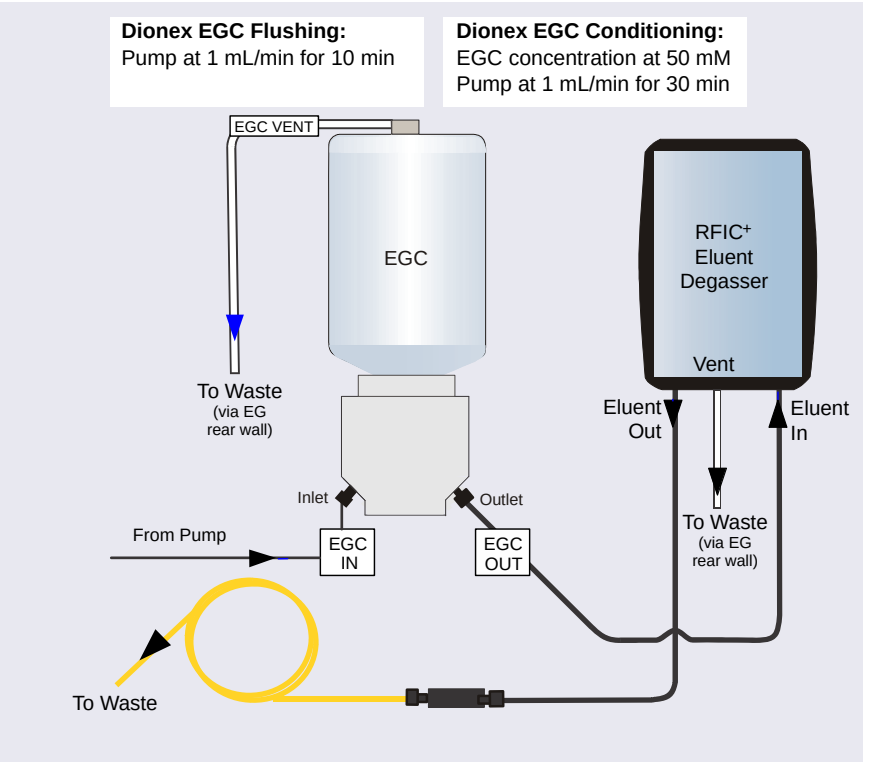


Figure 4-28. *Flow Schematic for Conditioning the Dionex EGC: Analytical Flow Version*

NOTE The backpressure must be at least 1.4 MPa (200 psi).

3. On the Chromeleon 7 ePanel Set or Chromeleon 6.8 panel tabset:
   - Verify that the suppressor and the CR-TC are off.

IMPORTANT **To avoid damaging the suppressor and Dionex CR-TC, always turn them off before conditioning the Dionex EGC. The pump flow is on during conditioning; however, no flow reaches the suppressor and Dionex CR-TC.**

   - **Gradient pump only:** Enter 100% for the reservoir containing the deionized water.
   - Set the pump flow to 1.0 mL/min. This turns on the pump flow, also.
4. Pump deionized water for 10 minutes.
5. Set the EGC concentration to 50 mM. This turns on the Dionex EGC power, also.
6. Run at the selected settings (1.0 mL/min at 50 mM) for 30 minutes.
7. Turn off the pump flow. This turns off the power to the Dionex EGC, also.

Analytical IC

Completing the Dionex EGC Plumbing

1. Unplug the Dionex EGC electrical cable.
2. Disconnect the backpressure tubing from the RFIC$^+$ Eluent Degasser eluent out line.
3. Temporarily remove the luer adapter and vent line and replace the 10-32 plug or fitting in the vent opening.
4. Lift the Dionex EGC out of the holder, turn it upside down, and place it on the drip tray in the service position (see Figure 4-24).
5. Disconnect the RFIC$^+$ Eluent Degasser inlet line from the Dionex EGC **OUTLET** port.
6. Cut a length of 0.25 mm (0.010 in) ID black PEEK tubing long enough to connect from the Dionex EGC to the CR-TC **ELUENT IN** port. Connect one end of this line to the EGC **OUTLET** port.
7. Turn the Dionex EGC right-side up. Shake and tap the cartridge to dislodge bubbles from the eluent generation chamber.
8. Reinstall the Dionex EGC in the holder.
9. Reinstall the luer adapter and vent line.

10. Reconnect the Dionex EGC electrical cable.

Analytical IC

Hydrating the Dionex CR-TC

1. Remove the plugs from the Dionex CR-TC ports.
2. Locate the CR-TC Hydration Tubing Kit (P/N 063487) provided in the EG Ship Kit (P/N 072047).
3. Connect the hydration tubing as shown in Figure 4-29.

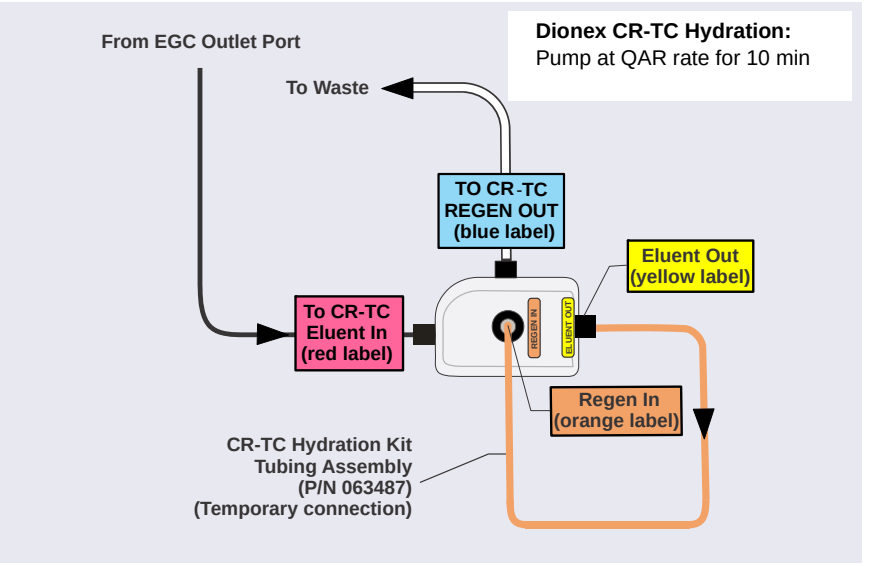


Figure 4-29. *Dionex CR-TC Plumbing for Hydration: Analytical Flow Version*

4. Connect the Dionex EGC outlet line to the CR-TC **ELUENT IN** port.
5. Disconnect the 1.58 mm (0.062 in) ID ETFE (ethylene tetrafluoroethylene) tubing labeled **WASTE, GAS SEPARATOR / SRS/AES REGEN OUT** from the system tubing package (described on page 95).
6. Connect this tubing to the CR-TC **REGEN OUT** port.
7. Route the **WASTE, GAS SEPARATOR** line through the slot on the EG and connect it to the gas separator waste tube. For instructions, see Section 4.3.

8. In Chromeleon:
   a. Verify that the suppressor and Dionex EGC are turned off.

IMPORTANT **To avoid damaging the suppressor, always turn off the suppressor before hydrating the Dionex CR-TC. The pump flow is on during conditioning; however, no flow reaches the suppressor.**

   b. **Gradient pump only:** Enter 100% for the reservoir containing the deionized water.
   c. Set the pump flow to the rate specified in the Quality Assurance Report (QAR) shipped with your separator column.
9. Allow the pump to run for at least 10 minutes. Turn off the pump flow.
10. Disconnect the hydration tubing assembly from the **ELUENT OUT** and **REGEN IN** ports on the Dionex CR-TC.

Analytical IC

Completing the Dionex CR-TC Plumbing

Refer to Figure 4-30 and the following steps to complete the Dionex CR-TC plumbing.

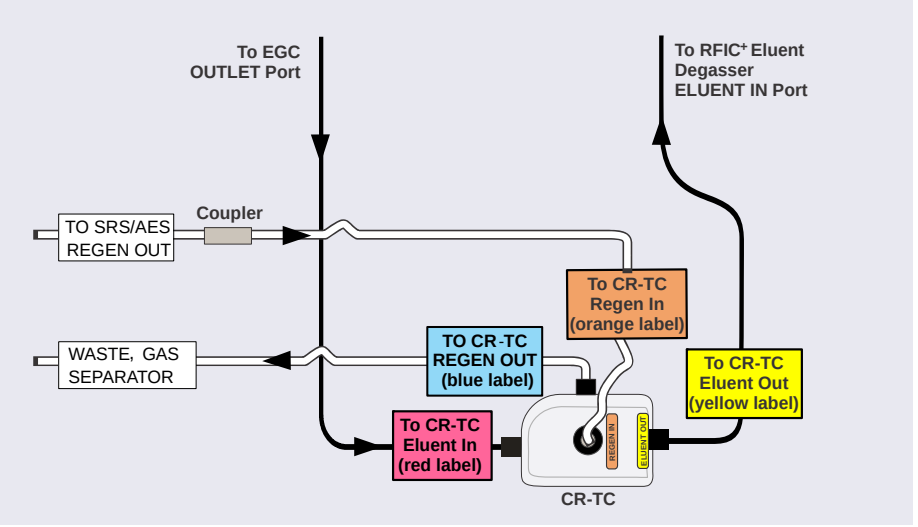


Figure 4-30. *Dionex CR-TC Plumbing Diagram: Analytical Flow Version Installation Completed*

1. In the tubing chase on the lower-left side of the EG, locate the line labeled **TO CR-TC REGEN IN** (orange label). Connect this line to the Dionex CR-TC **REGEN IN** port. Route the other end of the line from the EG rear panel to the DC.
2. Connect the line from the Dionex RFIC+ Eluent Degasser labeled **TO CR-TC ELUENT OUT** (yellow label) to the Dionex CR-TC **ELUENT OUT** port.
3. Pull the line labeled **DEGAS VENT** through the opening in the rear wall above the bulkhead connectors and connect the line to the luer adapter in the **VENT** port on the Dionex RFIC+ Eluent Degasser. Direct the free end of the line to a waste container.
4. Check that no liquid lines are caught under the Dionex CR-TC and then push the device firmly onto the ball studs on the mounting plate. The Dionex CR-TC clicks into place when properly installed.
5. Connect the Dionex CR-TC electrical cable.
6. For a dual-analysis system, repeat the steps above to install the second Dionex EGC and CR-TC.

Analytical IC

4.2.8 Plumbing the DC for Analytical IC Applications

This section provides brief installation and plumbing instructions for the guard column, separator column, and suppressor.

Before Beginning

1. Refer to the column and suppressor manuals for detailed installation and start-up instructions (including backpressure requirements for the suppressor).

   Also refer to the example plumbing diagrams on the DC lower door or in Chapter 3, "Configurations," in *Dionex ICS-5000+ Ion Chromatography Operator's Manual* (Document No. 065446).

   The manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).
2. Remove the guard column, separator column, and suppressor from their boxes.

3. Remove the fitting plugs from the ends of each column and from all ports on the suppressor.
4. Discard any tubing temporarily connecting the suppressor ports.

NOTE Unless instructed otherwise, use tubing from the system tubing package (described on page 95) for DC plumbing connections.

Figure 4-32 shows the liquid flow path through the DC components for conductivity detection after all plumbing connections are complete. Figure 4-31 shows the flow path for electrochemical detection.

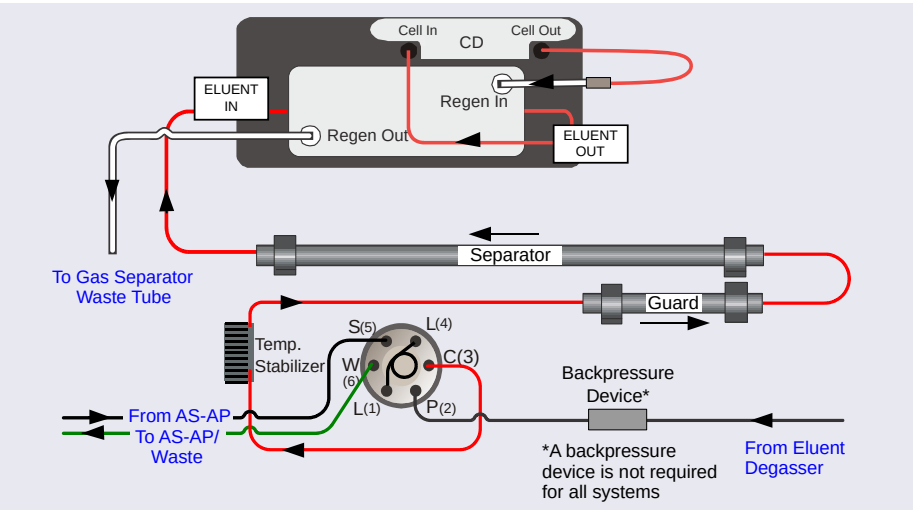


Figure 4-31. *Example DC Plumbing for Analytical IC with Conductivity Detection: System 1 (Left Side) Shown*

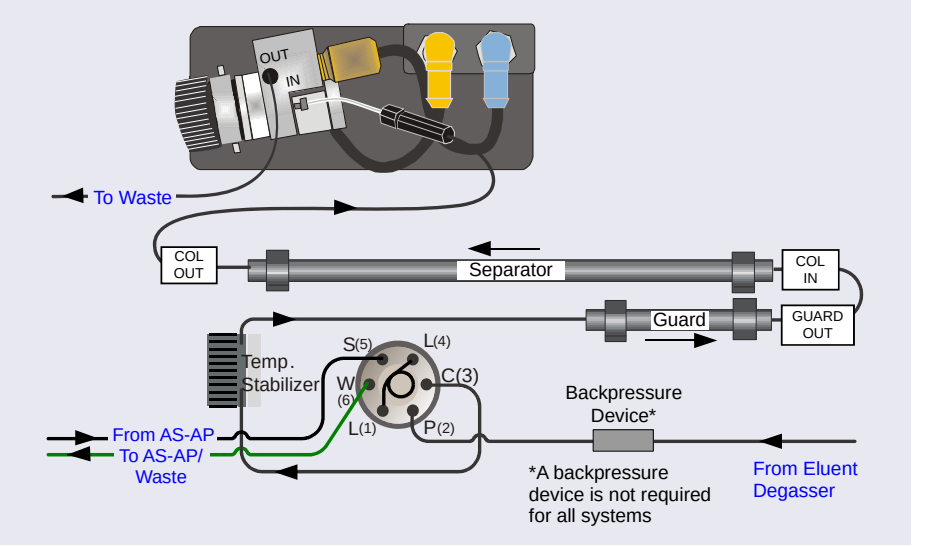


Figure 4-32. *Example DC Plumbing for Analytical IC with Electrochemical Detection: System 1 (Left Side) Shown*

Analytical IC

Plumbing the DC Injection Valve

1. Cut a length of 0.25 mm (0.010 in) ID black PEEK tubing long enough to connect from the Dionex RFIC$^+$ Eluent Degasser to the injection valve.
2. Connect one end of this tubing to the coupler on the line from the Dionex RFIC$^+$ Eluent Degasser labeled **TO INJ VALVE-P** (white label). Route the line to the injection valve and connect it to port **P** (2).
3. If required for your system, connect backpressure tubing to the pump outlet (see Section 4.4.1).
4. Connect the line from the temperature stabilizer to port **C** (3).
5. Route all lines through the appropriate tubing slots and secure the tubing in the tubing clips (see Figure 4-33).

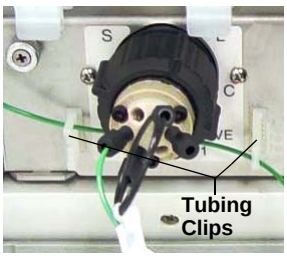


Figure 4-33. *Tubing Clips*

NOTE After all system plumbing is completed, the valve panel should slide forward and backward relatively easily, without kinking or catching any of the tubing.

Analytical IC

Plumbing the Columns in the DC

1. Before connecting the columns to the suppressor, pump eluent through the columns to waste for at least 30 minutes as described in the column manual. Pump at the standard flow rate for the column.
2. Connect the tubing to the columns as shown in Figure 4-31 or Figure 4-32.
3. Check the arrow on each column label; it should point in the direction of flow (away from the injection valve).
4. Push the guard and separator columns onto the column clips in the lower compartment of the DC.

5. Open the DC upper door and route the line from the separator column outlet through the tubing slot to the upper compartment of the DC.

Analytical IC

Plumbing the Suppressor and Conductivity Cell in the DC

1. Hydrate the suppressor. Refer to the suppressor manual for the recommended number of backpressure coils.
2. Connect the tubing to the suppressor and cell as shown in Figure 4-31.
3. Close the DC door.
4. Go on to system equilibration (Section 4.4).

Analytical IC

Plumbing the Electrochemical Cell in the DC

1. Before completing the electrochemical cell plumbing, follow the instructions in Section B.1 to install the cell electrodes and the cell inlet tubing.
2. Connect the tubing to the cell as shown in Figure 4-32.
3. Place the waste line from the cell out port into a waste container or appropriate drain.

IMPORTANT **For correct drainage, make sure waste lines are not bent, pinched, or elevated at any point. Do not allow the ends of the lines to be submerged in waste liquid.**

4. Close the DC door.
5. Go on to system equilibration (Section 4.4).

Analytical IC

4.2.9 Plumbing the TC for Analytical IC Applications

Plumbing the TC Injection Valve and Columns

1. Before connecting the columns, pump eluent through the columns to waste for at least 30 minutes as described in the column manual. Pump at the standard flow rate for the column. For detailed column startup and operational instructions, refer to the column manual provided on the Thermo Scientific Reference Library DVD (P/N 053891).
2. Locate these items in the TC Ship Kit (P/N 064789):

- Sample loop, 25 µL (P/N 042857) (two sample loops are included)
- 0.75 mm (0.030 in) ID PEEK tubing (green) (P/N 044777); used for the injection valve waste line
- Standard bore systems: 0.25 mm (0.010 in) ID PEEK tubing (black) (P/N 052306); used for all valve and column connections except the waste line
- Microbore systems: 0.125 mm (0.005 in) ID PEEK tubing (red) (P/N 052310); used for all valve and column connections except the waste line

3. Connect tubing from system components (Dionex AS-AP inject port, temperature stabilizer, and pump) as shown in Figure 4-34.
4. Cut the remaining tubing lengths (waste line, column connector, and cell inlet) and connect them. Tubing lengths should be as short as possible to minimize the void volume in the system.

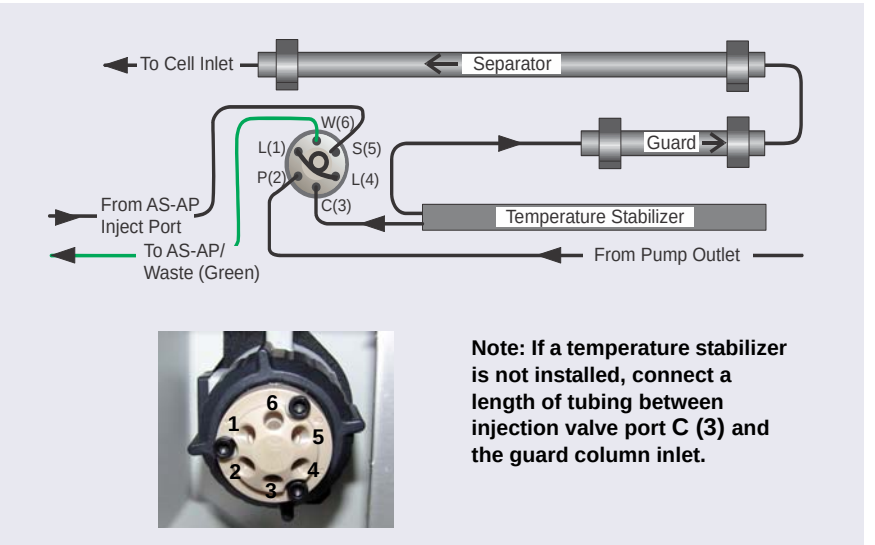


Figure 4-34. *TC Plumbing Schematic*

5. Check the arrow on each column label; it should point in the direction of flow (away from the injection valve).
6. Route the tubing connected to port **W** (6) to the Dionex AS-AP drip tray. For details about connections to a Dionex AS-AP, see Section 3.6.2.

7. Route the separator column outlet tubing through the tubing chase and connect it to the detector cell inlet.
8. If required for your system, connect backpressure tubing to the pump outlet (see Section 4.4.1).
9. Route all lines through the appropriate tubing slots. Be sure to push tubing (especially the Dionex AS-AP inject port tubing) all the way to the back of the slot on the side of the TC.

Analytical IC

Connecting the TC to a Detector

The outlet line from the separator column in the TC can be connected to various types of detectors, including the Dionex VWD, Dionex PDA, and Thermo Scientific MSQ Mass Spectrometer. Refer to the detector manual for detailed installation instructions. Manuals for Dionex detectors are provided on the Thermo Scientific Reference Library DVD (P/N 053891).

Go on to system equilibration (Section 4.4).

4.3 Connecting Waste Lines to the Gas Separator Waste Tube

NOTE A gas separator waste tube is required if the Dionex ICS-5000+ system includes an EG or a DC with an electrolytic suppressor. The EG and electrolytic suppressor generate small amounts of electrolytic gases (hydrogen or oxygen). The gas separator waste tube is used to avoid concentrating these gases in the waste container.

Follow the instructions below to connect each EG or suppressor regenerant waste line to the gas separator waste tube.

1. Locate the gas separator waste tube assembly (P/N 045460) in the DC Ship Kit (P/N 072011, standard DC; P/N 22171-62000, low-temperature DC).
2. Place the gas separator waste tube assembly into a waste container or appropriate drain.
3. Make sure the junction of the white PTFE tubing and the black polyethylene tubing is above the top of the container and that the gas

separator waste tube and the waste container are open to the atmosphere (see Figure 4-35).

If necessary, you can extend the black tubing. Locate the compression coupler (P/N 045463) and 13 mm (0.52 in) ID tubing (P/N 045822) provided in the DC Ship Kit (P/N 072011, standard DC; P/N 22171-62000, low-temperature DC); attach the parts to the black tubing.

4. Connect the **WASTE, GAS SEPARATOR** line from the suppressor or EG to one of the lengths of 3 mm (1/8 in) ID white PTFE tubing on the gas separator waste tube assembly (see Figure 4-35).
5. If you are installing a dual-channel system, connect the other **WASTE, GAS SEPARATOR** line to the second length of white PTFE tubing on the assembly.

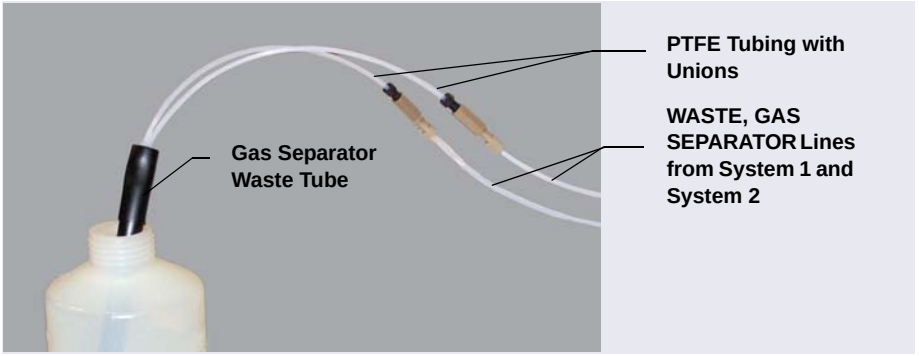


Figure 4-35. *Gas Separator Waste Tube Installation*

IMPORTANT **For correct drainage, make sure waste lines are not bent, pinched, or elevated at any point. Do not allow the ends of the lines to be submerged in waste liquid.**

CAUTION **DO NOT CAP THE WASTE CONTAINER: The Dionex ICS-5000$^+$ Eluent Generator (EG) and the electrolytic suppressors use an electrolytic process that results in the production of small amounts of oxygen or hydrogen gas. To ensure that the gas is not trapped in a closed container and allowed to concentrate, install a 1.3 cm (0.52 in) ID black gas separator waste tube (P/N 045460) in an uncapped waste container. Connect the WASTE, GAS SEPARATOR line to the waste tube (see Figure 4-35).**

NE FERMEZ PAS LE CONTENEUR DE GAZ RÉSIDUEL: Le Dionex ICS-5000+ Eluent Generator (EG) et les electrolytic suppressor travaillent avec un proces d´électrolyse, qui produit des petites quantités de gaz d´oxygène ou d´hydrogène. Afin de garantir que le gaz ne soit pas enfermé dans un conteneur fermé et puisse s´y concentrer, connectez un tube noir à gaz résiduel (diamètre intérieur = 1,3 cm; n° de commande 045460) à un conteneur ouvert (non fermé). Connectez le conteneur résiduel au tube résiduel/gaz séparateur (désigné: « Waste, Gas Separator»).

VERSCHLIESSEN SIE DEN ABFALLBEHÄLTER NICHT: Der Dionex ICS-5000+ Eluent Generator (EG) und electrolytic suppressors verwenden einen Elektrolyseprozess, durch welchen kleine Mengen an Sauerstoff und Wasserstoff gebildet werden. Führen Sie einen schwarzen Gasabscheiderschlauch (ID = 1,3 cm; Bestell-Nr. 045460) in einen offenen (unverschlossenen) Abfallbehälter, damit sich das Gas nicht in einem geschlossenen Behälter sammeln kann und aufkonzentriert. Verbinden Sie die mit Waste, Gas Separator bezeichnete Leitung mit dem Abfallschlauch.

4.4 Equilibrating the System

NOTE This section describes how to manually equilibrate the system. If you want to automate system startup and equilibration, use the Smart Startup feature in Chromeleon. Refer to the Chromeleon Help for details.

1. On the Chromeleon 7 ePanel Set or Chromeleon 6.8 panel tabset, verify that each Dionex device listed below (if installed in the system) is turned on and the selected setting for the device (flow rate, eluent concentration, temperature, and so on) is correct for your application:
   - Pump
   - EGC
   - CR-TC
   - EPM
   - Suppressor

- Temperature control devices (DC upper and lower compartments, IC Cube column heater, CD cell heater, reaction coil heater, TC column compartment)

Hot surface. Before servicing the instrument, allow any heated components to cool.

NOTE If a Dionex IC Cube is installed, set the temperature of the DC upper compartment to 15 °C. Set the IC Cube column heater to the recommended temperature for your application.

2. Click **Monitor Background** on the toolbar above the Chromeleon 7 ePanel Set or on the **Home** panel of the Chromeleon 6.8 panel tabset. Chromeleon begins plotting the detector signal and pump pressure readings.
3. View the detector signal and monitor the background. Refer to the column manual for the appropriate background for your application. The column manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).
4. Offset the detector background and zero the reading by clicking the **Autozero** button.
5. Verify that the detector baseline is at the expected reading for your application and is stable.
6. Monitor the DP/SP pressure to be sure the pressure is at the expected reading for the installed column and is stable.

Analytical IC

For an analytical system, if the system pressure is below 14 MPa (2000 psi), install a backpressure coil (see Section 4.4.1).

7. Verify that all installed temperature control devices are at their set points and are stable.

NOTE Equilibration time varies, and it may take some time to reach the expected values.

Capillary IC

Because capillary IC systems use low flow rates and consume very little eluent, you can leave a capillary IC system on at all times, allowing it to remain equilibrated and always ready to run the next sample.

Analytical IC

4.4.1 Installing a Backpressure Coil

In an analytical IC system, if the system pressure is below 14 MPa (2000 psi) during system equilibration (see Section 4.4), install a backpressure coil between the injection valve and the **ELUENT OUT** port on the Dionex EGC.

Connect one end of the backpressure coil to port **P** (2) on the injection valve; connect the other end to the **TO INJ VALVE IN - P** line.

The EG Ship Kit (P/N 072047) includes four backpressure coils (see Table 4-2).

Part Number	Backpressure Coil Description	Flow Rate	Approximate Back-pressure Added
AAA-053762	4 mm (0.005 in) ID, red	1.0 mL/min	1.75 MPa (250 psi)
		2.0 mL/min	3.5 MPa (500 psi)
AAA-053763	4 mm (0.005 in) ID, red	1.0 mL/min	3.5 MPa (500 psi)
		2.0 mL/min	7 MPa (1000 psi)
053764	2 mm (0.003 in) ID, yellow	0.25 mL/min	1.75 MPa (250 psi)
		0.50 mL/min	3.5 MPa (500 psi)
053765	2 mm (0.003 in) ID, yellow	0.25 mL/min	3.5 MPa (500 psi)
		0.50 mL/min	7 MPa (1000 psi)

Table 4-2. *Backpressure Coils*

IMPORTANT **The recommended maximum operating pressure for the EG in a standard-pressure analytical system is 21 MPa (3000 psi). The recommended maximum operating pressure for the EG in a high-pressure analytical system is 34 MPa (5000 psi). Excessive backpressure may rupture the tubing inside the Dionex RFIC+ Eluent Degasser.**

A • Installing Pump Options

This appendix provides instructions for the following pump options:

- Pressurizing eluent reservoirs (Section A.1)
- Replumbing the piston seal wash system (Section A.2)

A.1 Pressurizing Eluent Reservoirs

The DP/SP does not require pressurized eluent reservoirs. However, Thermo Fisher Scientific recommends pressurizing reservoirs with helium or nitrogen under the following circumstances:

- When using eluents that are sensitive to contamination.
- When combining aqueous and nonaqueous components (for example, water and acetonitrile). Pressurizable reservoirs allow eluents to be stored under a specific atmosphere.

All eluent reservoirs available for use with the DP/SP can be pressurized. If you plan to pressurize the eluent reservoirs, a regulator kit is required. The kit is available in two versions:

- The EO Regulator Kit (P/N 074422) is required when the DC is installed as the topmost module in the system. The kit includes a pressure regulator and gauge assembly with four outputs (for connections to four eluent reservoirs), as well as the tubing and fittings required.
- When the TC, Dionex VWD, or Dionex PDA is installed as the topmost module in the system, the TC/VWD/PDA Regulator Bracket Kit (P/N 074424) is required. The kit includes the EO Regulator Kit described above, as well as a right-angle regulator bracket and mounting hardware. After attaching the bracket to the TC or detector, you will mount the gas regulator assembly on the bracket.

If more reservoirs are required, order a second regulator (P/N 074425).

A.1.1 Installing the TC/VWD/PDA Regulator Bracket

The TC/VWD/PDA Regulator Bracket Kit (P/N 074424) includes a regulator bracket (P/N 074435), two screws (P/N 045687), and two washers (P/N 010645).

1. Place one leg of the regulator bracket on top of the TC or detector. Orient the bracket as shown in Figure A-1.
2. Secure the regulator bracket to the module, using the screws and washers provided in the Regulator Bracket Kit.

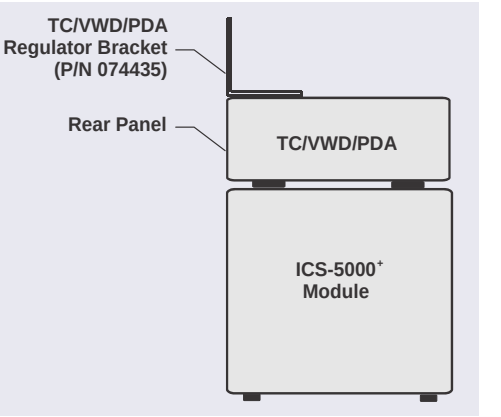


Figure A-1. *TC/VWD/PDA Regulator Bracket Orientation*

A.1.2 Connecting the Gas Source

1. Attach the EO regulator support bracket (P/N 074426) to the rear panel of the DC (see Figure A-2) or to the regulator bracket on the TC, VWD, or PDA.
2. Push the EO Gas Regulator (P/N 074425) onto the top of the support bracket.
3. Locate the 1/4 in NPT to 1/8 in adapter (P/N 063505) and the orange, 3 mm (1/8 in) ID air line tubing (P/N 052297) provided in the EO Regulator Kit.
4. Push one end of the orange tubing into the **GAS IN** fitting on the EO Gas Regulator.
5. Connect the other end of the orange tubing to a clean helium or nitrogen source regulated to between approximately 0.17 and 0.34 MPa (25 and

50 psi). If needed for your gas source, use the adapter to connect the tubing to the gas source.

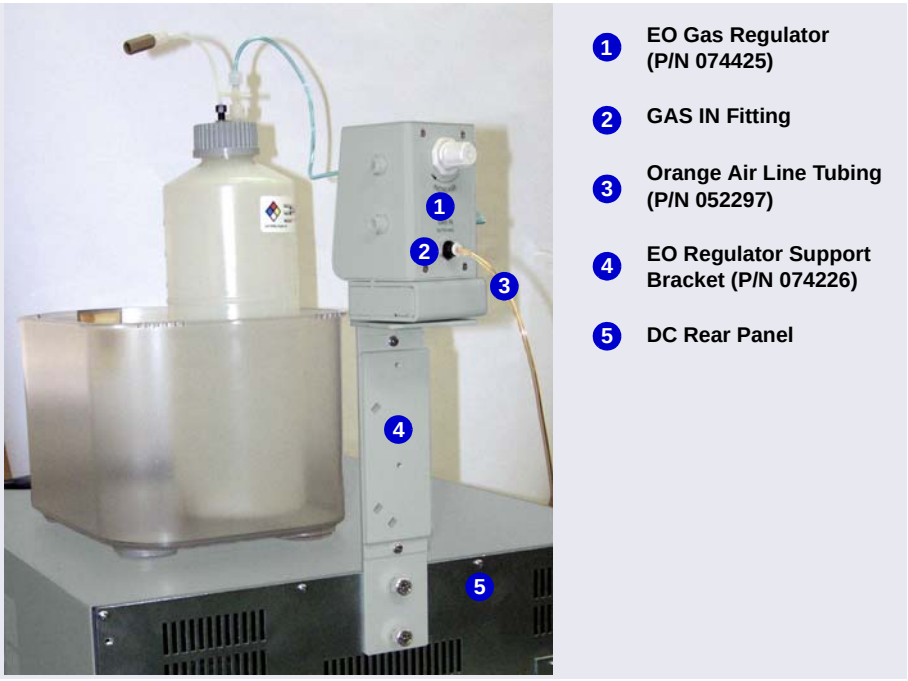


Figure A-2. *EO Gas Regulator Connections*

6. For each reservoir to be connected, locate a gas source tubing assembly (P/N 063942). Each assembly consists of a length of blue, 3 mm (1/8 in) ID air line tubing with a quick-disconnect fitting on one end and a one-way valve fitting on the other end (see Figure A-3).
7. Push the one-way valve fitting onto the luer fitting on the top of the reservoir cap. This is the gas shutoff valve for the reservoir.

8. Remove the black cap from the quick-disconnect fitting, twist off the end of the quick-disconnect fitting, and then connect the free end of the blue tubing to a quick-disconnect fitting on the side of the EO Gas Regulator.

Figure A-3. *Gas Connections to Reservoir*

NOTE Low-pressure valves can be installed on the EO regulator support bracket (see Section B.2).

A.1.3 Pressurizing the Eluent Reservoir

NOTE Do not pressurize the system until after the reservoir is plumbed.

1. Turn the gas regulator knob fully counterclockwise to ensure that there is no pressure to the reservoir when the gas source is turned on.
2. Close the gas shutoff valve on each reservoir cap.
3. Turn on the gas source; the upper limit is 0.34 MPa (50 psi).

4. Turn the gas regulator knob clockwise to pressurize the eluent reservoir. Adjust the pressure to between 30 and 40 kPa (5 and 6 psi).

Never pressurize eluent reservoirs above 70 kPa (10 psi). Pressurizing reservoirs above this limit can cause the reservoir to explode.

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

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

5. If the liquid lines have been plumbed to the pump, you may open the gas shutoff valve on each reservoir cap.

A.2 Replumbing the Seal Wash System (DP only)

In a DP, the standard piston seal wash system is designed for use with only one of the two pumps. When the DP is shipped from the factory, the seal wash system is connected to the bottom pump (pump 1). If you want to connect the seal wash system to the top pump (pump 2), follow the replumbing instructions in this section.

When you finish these connections, follow the instructions in Section 3.13 to set up the piston seal wash system.

1. To connect the seal wash system to pump 2, disconnect three piston seal wash lines from pump 1 (see Figure) and reconnect the lines to their respective locations on pump 2 (see Figure A-5).

2. Move these lines from pump 1 to pump 2:

   - The short piece of tubing between the primary and secondary pump heads 1.
   - The tubing from the secondary pump head that connects to the seal wash pump 2.
   - The seal wash reservoir inlet line from the primary pump head 3.

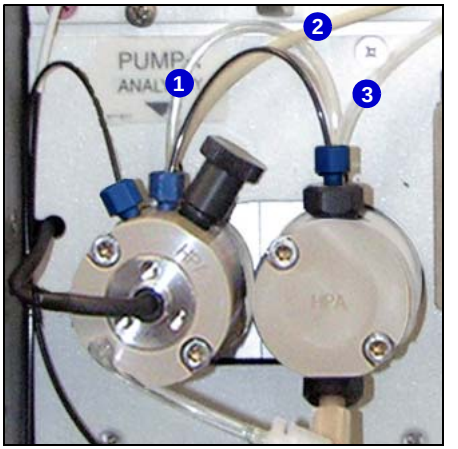


Figure A-4. *Piston Seal Wash Connections to Pump 1*

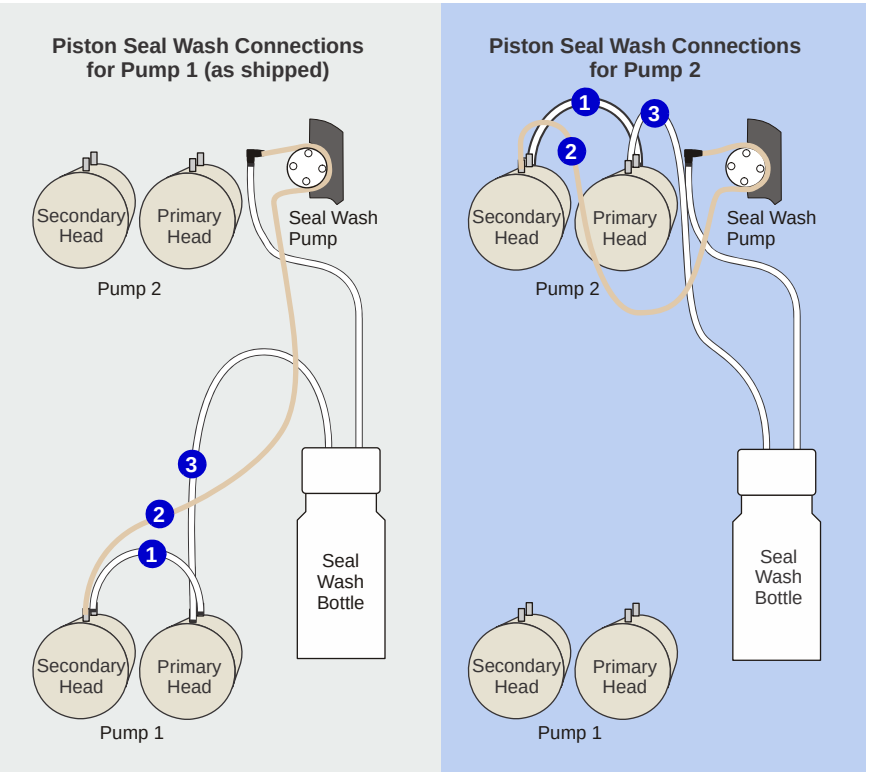


Figure A-5. *DP Piston Seal Wash Connections (Pump 1 or Pump 2)*

B • Installing DC Options

This appendix provides instructions for installing the following DC options:

- ED amperometry cell (Section B.1)
- Low-pressure valves (Section B.2)
- Injection valve panel (Section B.3) — Analytical IC
- Dionex ICS-5000$^+$ Automation Manager (Section B.4) — Analytical IC
- Dionex ICS-5000$^+$ IC Cube (Section B.5) — Capillary IC

B.1 Installing the ED Amperometry Cell

NOTE Always wear gloves when handling the ED cell. Never touch the electrode surface.

B.1.1 Unpacking and Disassembling the Cell

1. Remove the ED cell from the box. Refer to Figure B-1 to identify the cell parts.

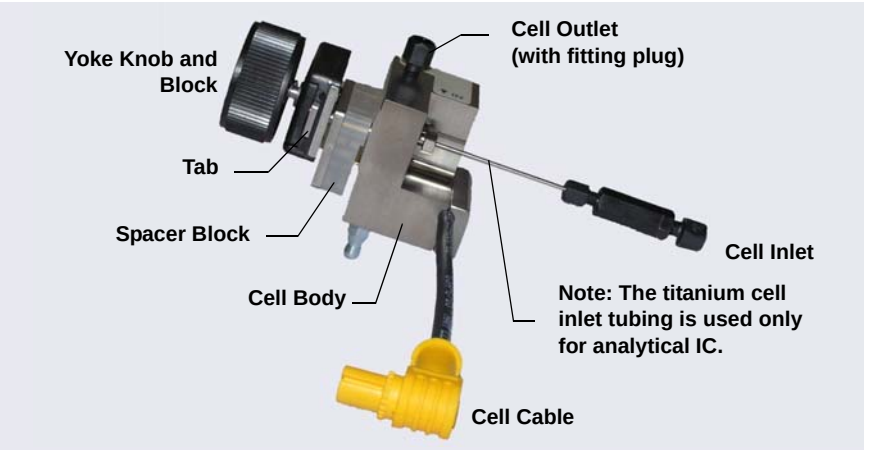


Figure B-1. *ED Cell Components*

2. Loosen the yoke knob that holds the spacer block to the cell body by unscrewing it two to three turns.
3. Squeeze the tabs on the sides of the yoke block and pull the knob with yoke block off the spacer block.

   NOTE Handle the inside surfaces of the cell carefully to prevent scratches, which may subsequently cause leaks.

4. Slide the spacer block off the alignment pins on the cell body (see Figure B-2). The spacer block is for use only with disposable working electrodes. If you will be installing a conventional working electrode, you can remove the spacer block and save it for possible future use.

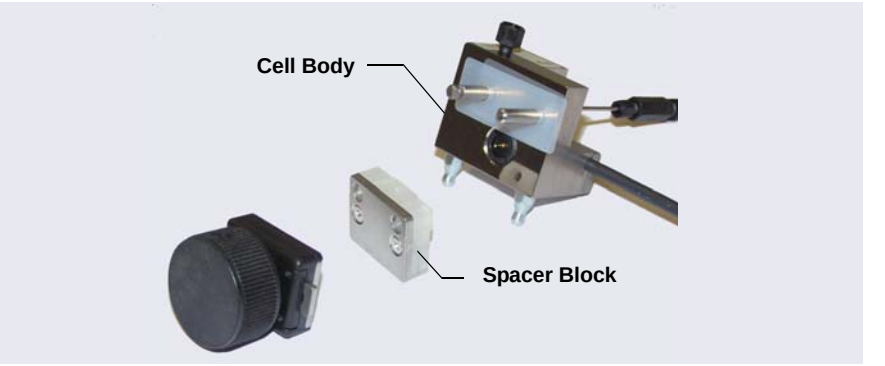


Figure B-2. *Disassembling the ED Cell*

5. Remove the protective film from the alignment pins on the cell body (see Figure B-3).

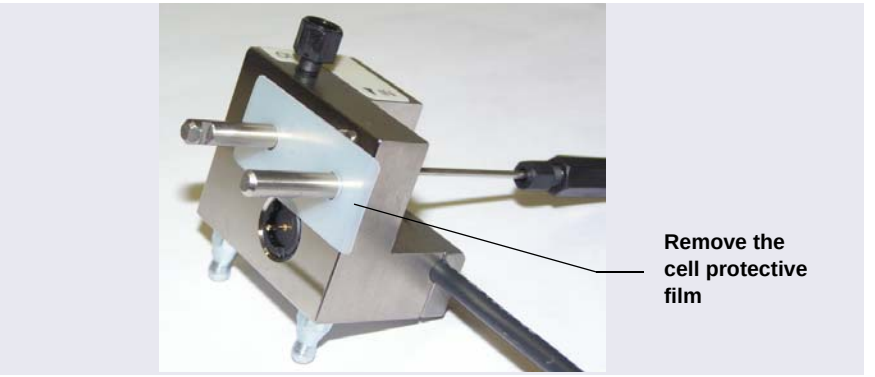


Figure B-3. *Removing the Cell Protective Film*

Capillary IC

6. If you are installing the ED cell in a capillary IC system, use an open-end wrench to remove the titanium inlet line from the cell (see Figure B-4).

Figure B-4. *Capillary IC Only: Removing the Titanium Inlet Line*

7. Rinse the surface of the cell with ASTM Type I (18 megohm-cm) filtered and deionized water.
8. Clean the polished surface of the cell with a damp clean, lint-free tissue.
9. Install the working electrode. For a disposable working electrode, see Section B.1.2. For a conventional working electrode, see Section B.1.3.

B.1.2 Installing a Disposable Working Electrode

For installation instructions for disposable working electrodes, refer to the installation guide shipped with the electrodes (see below) or to *Product Manual for Disposable Electrodes* (Document No. 065040), which is provided on the Thermo Scientific Reference Library DVD (P/N 053891).

- *Disposable Silver Electrode Installation Guide for ED* (Document No. 065137)
- *Disposable Platinum Electrode Installation Guide for ED* (Document No. 065139)
- *Disposable Gold Electrode Installation Guide* (Document No. 065191)

IMPORTANT **When you install a disposable electrode, be sure to install the correct gasket for your system:**

- **For a capillary system, use a 0.001 in PTFE gasket (P/N 072117, Pkg. of 2).**
- **For an analytical system with a gold, silver, or platinum disposable electrode, use a 0.002 in PTFE gasket (P/N 060141, Pkg. of 4).**
- **For an analytical system with a carbon disposable electrode, use a 0.001 in Ultem™ gasket (P/N 069339).**

After installing a disposable working electrode, install the reference electrode:

- To install a pH-Ag/AgCl reference electrode, go on to Section B.1.4.
- To install a PdH reference electrode, go on to Section B.1.5.

B.1.3 Installing a Conventional Working Electrode

Notes on Polishing Conventional (Nondisposable) Working Electrodes

- **Do not polish new conventional working electrodes before installation.**

After an electrode has been used for a period of time, a layer of contamination may build up. When this occurs, the electrode must be polished. For details, refer to *Polishing Gold Working Electrodes* (Document No. 031154). The manual is provided on the Thermo Scientific Reference Library DVD (P/N 053891).

Items Needed for Installing a Conventional Working Electrode

- ED cell gasket for conventional working electrodes (P/N 045972)
- Blunt-end tweezers

NOTE Install the working electrode before connecting the cell to the ED.

1. Use tweezers to install the gasket over the alignment pins on the cell body (see Figure B-5). When correctly installed, one end of the gasket extends beyond the cell body, to facilitate gasket installation and removal.

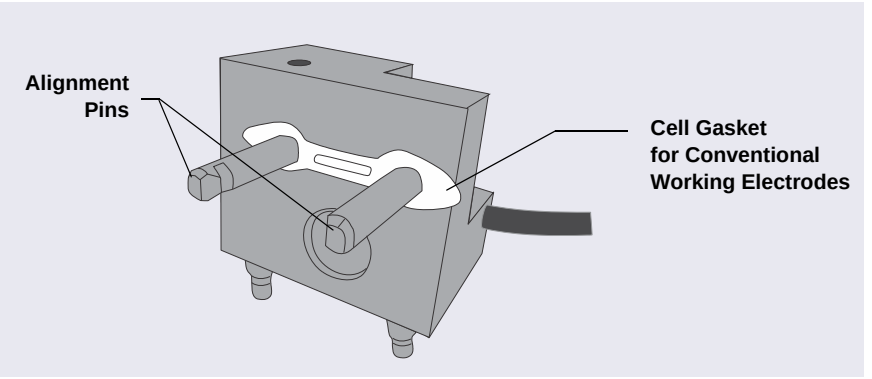


Figure B-5. *ED Cell Gasket for Conventional Working Electrodes*

2. Verify that the gasket is flat against the cell body and is not wrinkled.

3. Orient the working electrode block as shown in Figure B-6 and then slide it onto the alignment pins.

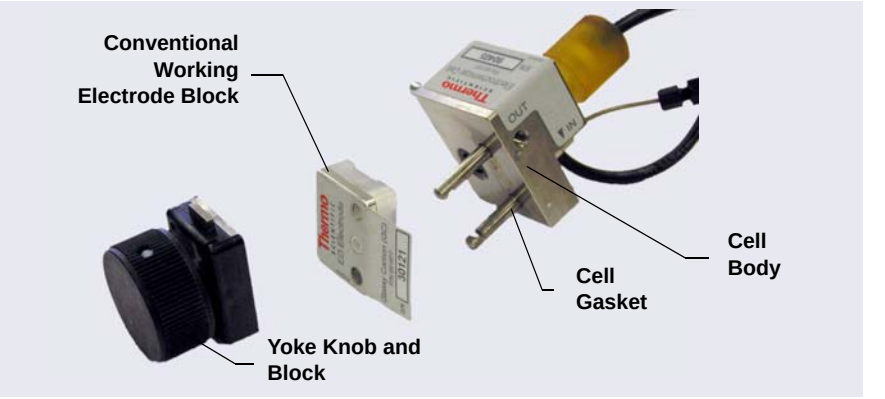


Figure B-6. *ED Cell Components*

4. Install the yoke knob on the alignment pins and fingertighten the knob by turning it a full 360 degrees.

   NOTE It is not possible to overtighten the yoke knob. After the knob clicks into place, it cannot be tightened any further. The yoke knob ensures that constant pressure is applied to the cell.

5. Install the reference electrode:

   - If you are installing a pH-Ag/AgCl reference electrode, go on to Section B.1.4.
   - If you are installing a PdH reference electrode, go on to Section B.1.5.

B.1.4 Installing the pH-Ag/AgCl Reference Electrode

Preparing the pH-Ag/AgCl Reference Electrode

1. Orient the cell assembly with the yoke knob on the left and push the cell onto its mounting location on the ED.
2. Remove the pH-Ag/AgCl reference electrode (P/N 061879) from its box.
3. Unscrew the storage cap from the electrode (see Figure B-7). Save the cap.

IMPORTANT **Always store the pH-Ag/AgCl reference electrode in the storage cap filled with saturated KCl solution when the cell is not in use. This prevents the pH-Ag/AgCl reference electrode membrane from drying out and damaging the electrode.**

Figure B-7. *pH-Ag/AgCl Reference Electrode in Storage Cap*

4. Rinse the pH-Ag/AgCl reference electrode thoroughly in ASTM Type I (18 megohm-cm) filtered and deionized water to remove any precipitated salt.
5. Calibrate the pH-Ag/AgCl reference electrode (see the next section).

Calibrating the pH-Ag/AgCl Reference Electrode

Items Needed

- A buffer solution with a pH of 7
- A second buffer solution with a different pH (typically one that matches the pH of the eluent used in your application; for example, pH 10 or pH 4)

Calibration Procedure

1. Connect the cell electrical cable to the ED.
2. Connect the reference electrode electrical cable to the ED. **Do not install the electrode in the cell yet.**
3. On the Chromeleon 7 ePanel Set, click the **ED** tab. On the Chromeleon 6.8 panel tabset, click the **EC Detector** tab.
4. Click the **Calibration** button. The Wellness panel opens (see Figure B-8).

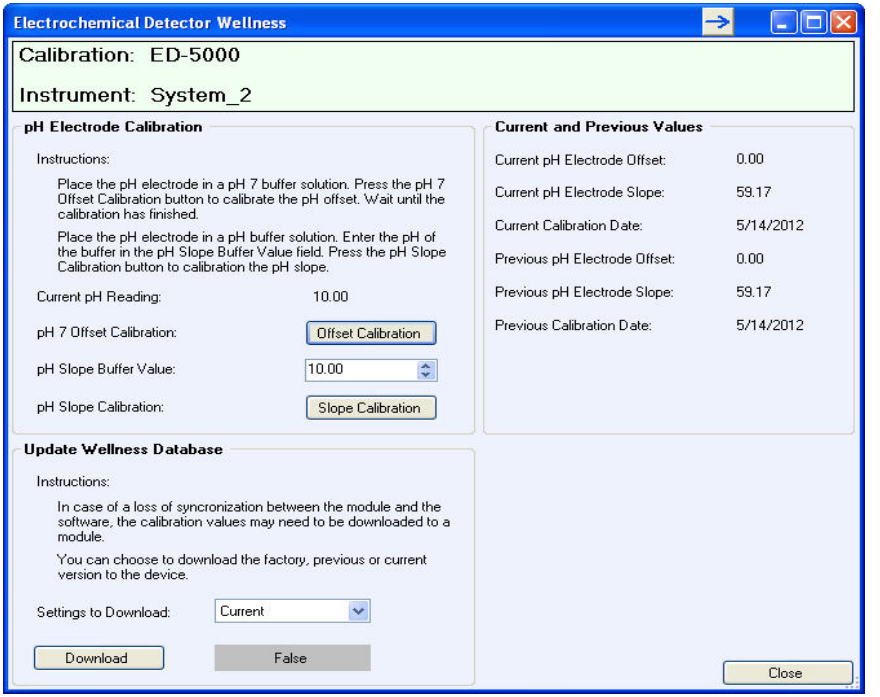


Figure B-8. *Wellness Panel: Dionex ICS-5000+ Electrochemical Detector (Chromeleon 7 Version Shown)*

5. Follow the instructions on the Wellness panel to calibrate the electrode.
6. Disconnect the reference electrode cable and the cell cable.
7. Grasp the cell body and pull straight out to remove the cell from the detector.

8. Install the pH-Ag/AgCl reference electrode in the cell:
   - For a capillary IC system, follow the instructions in the next section.
   - For an analytical IC system, go on to page 137.

Capillary IC

Installing the pH-Ag/AgCl Reference Electrode in the Cell for Capillary IC Systems

1. To avoid any hydraulic pressure buildup when inserting the reference electrode into the cell, make sure that fitting plugs are not installed on the cell inlet and outlet fittings.
2. Use a sharp tool (for example, the tip of a safety pin or a straight pin) to remove the pH-Ag/AgCl reference electrode O-ring (see Figure B-9).

Figure B-9. *pH-Ag/AgCl Reference Electrode O-Ring*

3. Using tweezers, install the reference electrode gasket for capillary IC (P/N 072162) into the bottom of the reference electrode well (see Figure B-10).

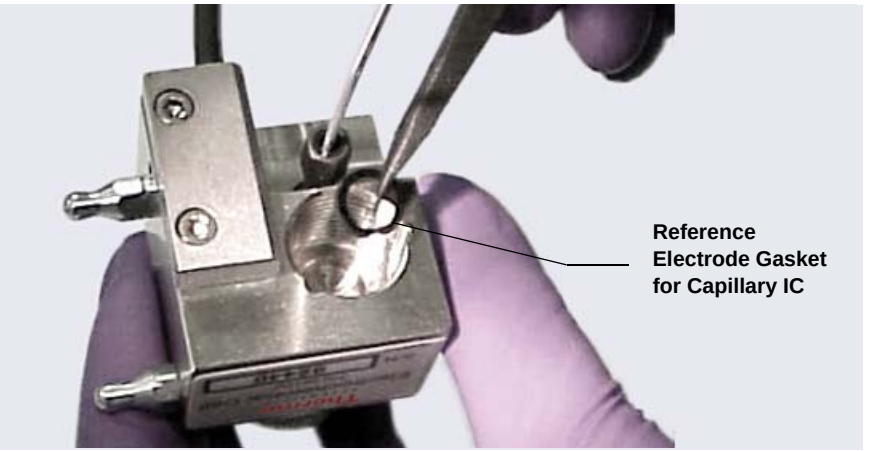


Figure B-10. *Reference Electrode Gasket for Capillary IC*

4. Verify that the gasket is centered in the bottom of the well and that it does not block the inlet or outlet of the well. The inlet and outlet are small round openings in the bottom of the well (see Figure B-11).

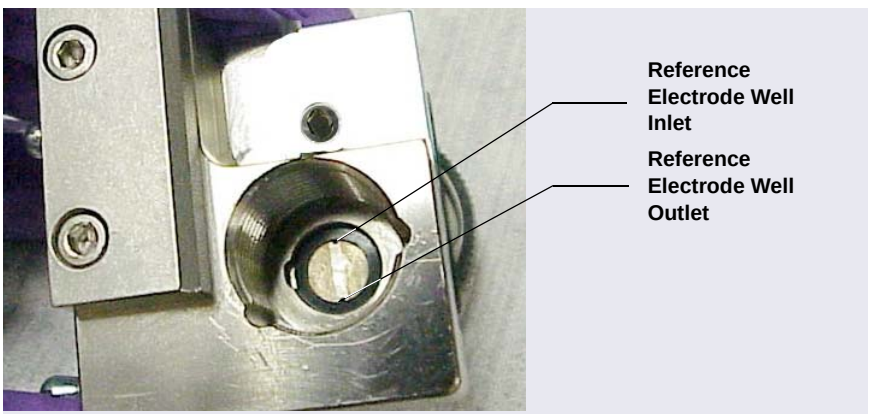


Figure B-11. *Reference Electrode Well with Reference Electrode Gasket for Capillary IC Installed*

5. Verify that the reference electrode O-ring has been removed and the reference electrode gasket is correctly installed in the bottom of the well.
6. Screw the pH-Ag/AgCl reference electrode into the reference electrode well and tighten it fingertight (see Figure B-12).

Figure B-12. *Installing the pH-Ag/AgCl Reference Electrode In the Reference Electrode Well*

7. Refer to Section 4.1.13 to complete the cell plumbing.

Analytical IC

Installing the pH-Ag/AgCl Reference Electrode in the Cell for Analytical IC Systems

1. To avoid any hydraulic pressure buildup when inserting the reference electrode into the cell, make sure that fitting plugs are not installed on the cell inlet and outlet fittings.
2. Verify that the pH-Ag/AgCl reference electrode O-ring is present (see Figure B-9) and then screw the pH-Ag/AgCl reference electrode into the reference electrode well and tighten it fingertight (see Figure B-12).

Figure B-13. *pH-Ag/AgCl Reference Electrode O-Ring*

3. Orient the cell assembly with the yoke knob on the left and then push the cell onto its mounting location on the ED (see Figure B-14).
4. If the detector is already installed, connect the reference electrode cable and the cell cable.

Figure B-14. *ED Cell Installed on ED*

5. Refer to "Plumbing the Electrochemical Cell in the DC" on page 114 to complete the cell plumbing.

Capillary IC

B.1.5 Installing the PdH Reference Electrode in a Capillary IC System

1. To avoid any hydraulic pressure buildup when inserting the reference electrode into the cell, make sure that fitting plugs are not installed on the cell inlet and outlet fittings.
2. Using tweezers, grasp the edge of the PdH reference electrode gasket (P/N 072214) (see Figure B-15). To avoid deforming the gasket cutout, do not place the tweezer tips on the cutout.

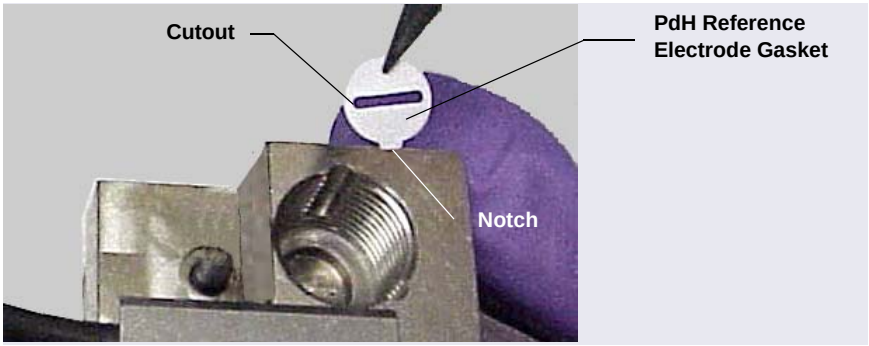


Figure B-15. *Installing the PdH Reference Electrode Gasket*

3. Orient the gasket so that the notched edge of the gasket aligns with the corresponding notch in the reference electrode well. Then, press the gasket into the well (see Figure B-16).

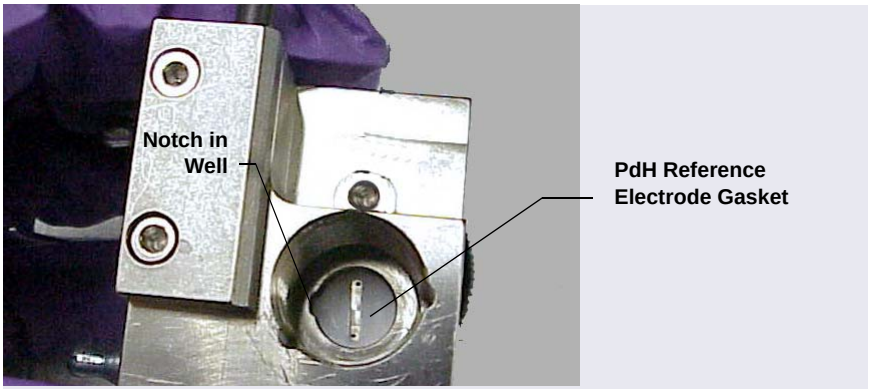


Figure B-16. *Reference Electrode Well with PdH Reference Electrode Gasket Installed*

4. Orient the fitting on the end of the PdH reference electrode so that the knobs on the fitting align with the grooves in the reference electrode well (see Figure B-17).
5. Insert the fitting into the well.

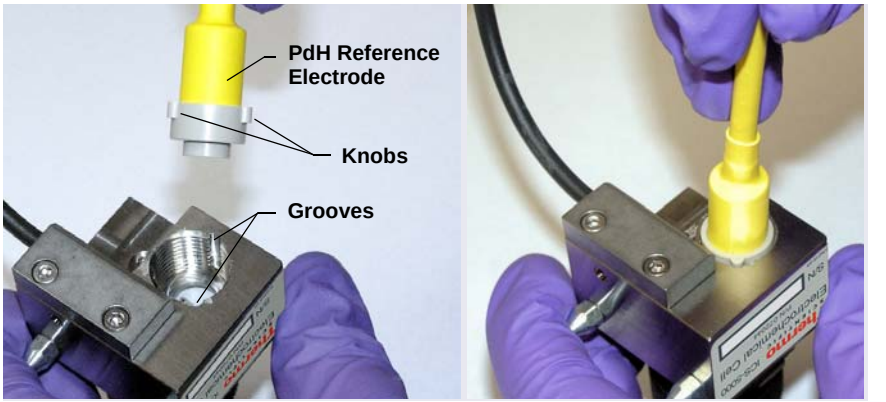


Figure B-17. *Inserting the PdH Reference Electrode Fitting into the Reference Electrode Well*

6. Screw the nut on the PdH reference electrode into the reference electrode well and tighten it fingertight (see Figure B-18). After fingertightening, use a wrench to tighten the nut an additional 20 to 30 degrees.

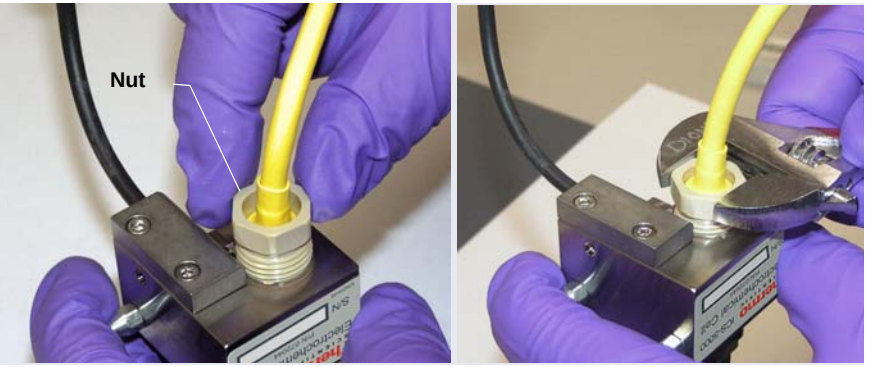


Figure B-18. *Installing the PdH Reference Electrode Nut*

7. Orient the cell assembly with the yoke knob on the left and then push the cell onto its mounting location on the ED.

8. If the detector is already installed, connect the reference electrode cable and the cell cable.
9. To complete the cell plumbing, go on to Section 4.1.13.

B.2 Installing Low-Pressure Valves in the DC

Three locations are available for installing low-pressure valves in the DC: on the rear panel, in the lower compartment, and on the Dionex ICS-5000$^+$ Automation Manager (AM). To install low-pressure valves on the rear panel or lower compartment, see the instructions in the next section. To install low-pressure valves on the AM, see Section B.4.

B.2.1 Installing a Low-Pressure Valve on the DC Rear Panel

1. Insert the two tabs on the valve mounting plate into available slots on the DC rear panel (see Figure B-19) or EO regulator stand bracket.
   - Four low-pressure valves can be installed on the DC rear panel.
   - If an EO Regulator Kit (P/N 062582) is installed (see Appendix A.1), two low-pressure valves can be installed on the EO bracket.
2. While holding the valve mounting plate firmly in place, tighten the captive thumbscrew.
3. Plug the valve into one of the low-pressure valve connectors on the DC rear panel (see Figure B-19). Plumb the valve as required.

4. Note which rear panel connector each valve is connected to. This information is required to control the valves in Chromeleon.

Figure B-19. *DC Rear Panel: External Low-Pressure Valve Connections*

B.2.2 Installing a Low-Pressure Valve Inside the DC

1. Insert the two tabs on the valve mounting plate into available slots in the lower compartment of the DC, above the columns.
2. While holding the valve mounting plate firmly in place, tighten the captive thumbscrew.
3. Route the valve cable to the back of the DC, through the slot on the side of the module. Connect the cable to one of the low-pressure valve connectors on the DC rear panel (see Figure B-19).

Analytical IC

B.3 Installing the Injection Valve Panel in the DC

Follow the instructions in this section to install the injection valve panel in the lower compartment of the DC. The panel can be ordered with 0, 1, or 2 valves mounted on the panel, and with either microbore or standard bore plumbing.

Valves	Plumbing Configuration	Part Number
0	Microbore	062660
1		075948
2		075949
0	Standard Bore	063776
1		075946
2		075947

Table B-1. *Injection Valve Panels*

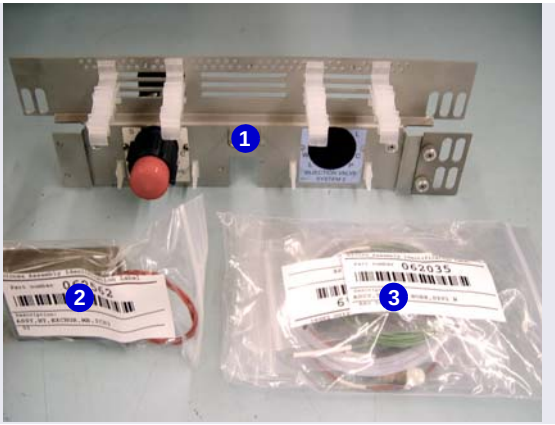
Each panel is shipped with the following items:

- A temperature stabilizer that has been preplumbed with either microbore (red) tubing (P/N 062562) or standard bore (black) tubing (P/N 062561). Dual-valve panels include two temperature stabilizers.
- One tubing package with precut and labeled tubing (either microbore or standard bore) for each valve installed on the panel. Labels on the tubing for system 1 (left side) are white; labels on the tubing for system 2 (right side) are blue.

Plumbing Configuration	System Number	Color of Tubing Labels	Part Number
Microbore	1	White	062035
	2	Blue	062036
Standard Bore	1	White	AAA-062031
	2	Blue	062062

Table B-2. *System Tubing Packages*

Figure B-20 shows the components shipped with a single-valve panel.



1. Injection Valve Panel (Single valve installed)
2. Temperature Stabilizer
3. System Tubing Package

Figure B-20. *Injection Valve Panel Ship Kit: Single-Valve Configuration*

IMPORTANT **Always turn off the DC power before installing a valve panel.**

1. If the DC power is on, press the **POWER** button on the front of the DC for 2 seconds to turn off the power before continuing.
2. Open the DC lower door.
3. Pull the column slide forward (see Figure B-21).

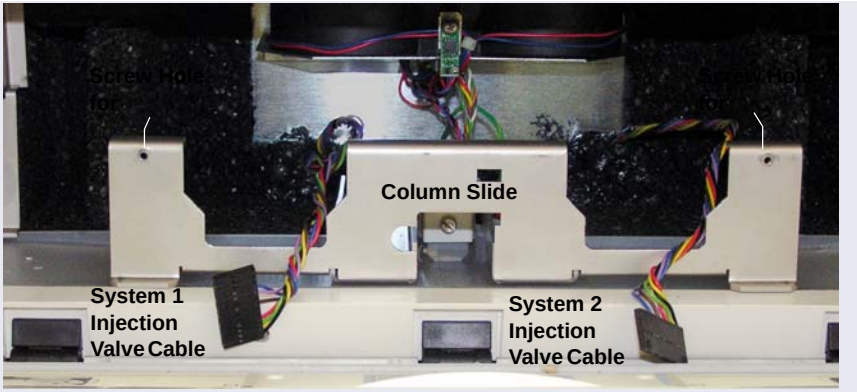


Figure B-21. *DC Lower Compartment Column Slide and Injection Valve Cables*

4. Connect the system 1 injection valve cable (labeled **SYS 1**) (see Figure B-21) to the connector on the back of the system 1 valve (left side). For a dual-valve panel, also connect the **SYS 2** cable to the system 2 valve (right side).
5. Align the captive thumbscrews on the panel (see Figure B-22) with the screw holes on the column slide (see Figure B-21).
6. While holding the column slide in place, tighten the thumbscrews to secure the panel onto the column slide.

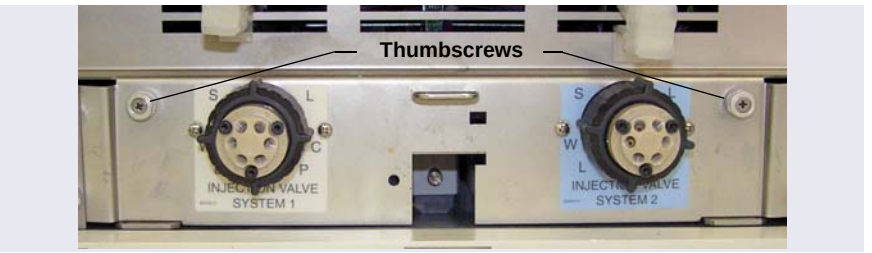


Figure B-22. *DC Lower Compartment Injection Valve Panel: Dual-Valve Configuration*

Installing the Temperature Stabilizer

Install the temperature stabilizer for system 1 (or a single system) on the left side of the injection valve panel (see Figure B-23). Install the temperature stabilizer for system 2 on the right side of the panel.

1. Slide the temperature stabilizer into the opening next to the valve.
2. Tighten the thumbscrews.

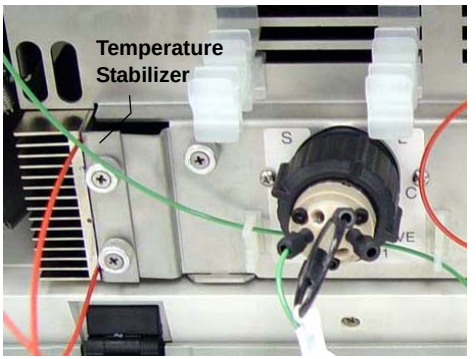


Figure B-23. *Temperature Stabilizer Installed on the Left Side of the Injection Valve Panel*

Analytical IC

B.4 Installing the Automation Manager (AM) in the DC

The AM consists of a tray for installation of valves and other components that are used for performing matrix elimination, large volume preconcentration, and other functions (see Figure B-24). The AM is installed into the upper compartment of the DC.

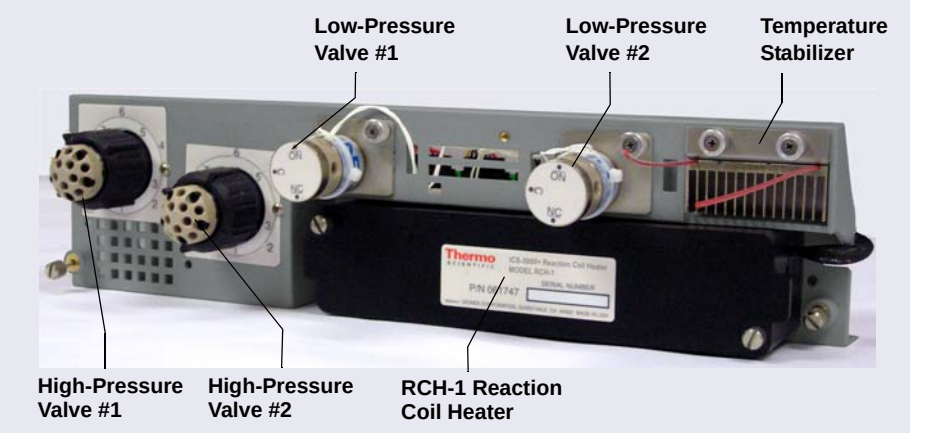


Figure B-24. *Dionex ICS-5000+ Automation Manager: Example Configuration*

NOTE Because the AM requires the full width of the DC upper compartment, an IC Cube cannot be installed in the DC when an AM is installed.

Connections from the AM to other components in the system (pump, injection valve, reagent reservoirs, and so on) depend on the application. Refer to Chapter 3, "Configurations," in *Dionex ICS-5000+ Ion Chromatography System Operator's Manual* (Document No. 065446) for the configuration schematic for your application.

The AM is available in the following configurations:

AM Configuration	Part Number
Two 10-port high-pressure valves, two low-pressure 3-way valves	075950
One 10-port high-pressure valve, one low-pressure 3-way valve	075951
One 6-port high-pressure valve, one low-pressure 3-way valve	075952
AutoPrep configuration: 10-port high-pressure valve AutoPrep sample loop AutoPrep standard loops	075953
AM tray with no valves	079833

Thermo Fisher Scientific offers the following optional components for the AM:

AM Component	Part Number
High-pressure valve, 6-port	075917
High-pressure valve, 10-port	075918
Low-pressure valve, 2-way	079848
Low-pressure valve, 3-way	061971
RCH-1 Reaction Coil Heater	079849
Temperature stabilizer, standard bore, 0.25 mm (0.010 in) ID	062561
Temperature stabilizer, microbore, 0.125 mm (0.005 in) ID	062562

Table B-1. AM Optional Components

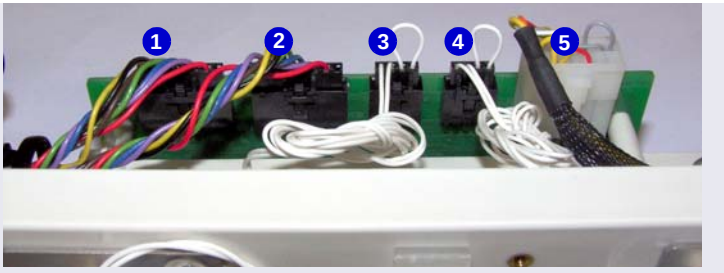
- If an application requires any of these options, attach it to the AM now (before installing the AM in the DC).
- If you are not installing optional components, go on to page 150 to install the AM in the DC.

B.4.1 Installing a High-Pressure Valve on the AM

1. While facing the rear of the AM, squeeze the release tabs on the outside edge of the plug that is installed in the valve mounting hole. Remove the plug.
2. Unscrew the black locking ring on the front of the high-pressure valve.
3. Attach the appropriate label (6-port or 10-port) to the front of the AM.
4. Remove the two Phillips screws and washers from the valve.
5. Orient the valve with the model label on top (see Figure B-25).
6. Hold the valve behind the AM and insert it through the valve mounting hole.
7. Reinstall the two Phillips screws and washers and tighten the screws.

Figure B-25. *High-Pressure Valve Installation*

8. Replace the black locking ring and tighten it fingertight.
9. Two high-pressure valve cables are connected to the AM prep board (see Figure B-26). Uncoil the appropriate valve cable and plug it into the connector on the valve.



1 High-Pressure Valve Connector (Left)
2 High-Pressure Valve Connector (Right)
3 Low-Pressure Valve Connector (Left)
4 Low-Pressure Valve Connector (Right)
5 Reaction Coil Heater Connector

Figure B-26. *Connections to the AM Prep Board*

B.4.2 Installing a Low-Pressure Valve on the AM

1. Insert the two tabs on the valve mounting plate into the slots for either the left or right valve mounting position.
2. While holding the valve mounting plate firmly against the AM, tighten the captive thumbscrew (see Figure B-26).
3. Thread the connector and wires through the opening next to the valve.

Figure B-27. *Low-Pressure Valve Installation (Left Valve Mounting Position)*

4. Plug the valve connector into the appropriate connector on the AM prep board (see Figure B-26).

NOTE For instructions on how to install low-pressure valves outside the AM, refer to Section B.2.

B.4.3 Installing the RCH-1 Reaction Coil Heater on the AM

1. Note the two ball studs on the back of the heater. Align the ball studs with the two receivers on the wall of the AM heater compartment.
2. Push the heater firmly onto the receivers and snap it into place.
3. Route the heater cable through the cutout to the right of the heater. Plug the cable into the **HEATER** connector on the AM prep board (see Figure B-26).

B.4.4 Installing the Temperature Stabilizer on the AM

1. Remove the plate on the right side of the AM that covers the temperature stabilizer mounting location.
2. Slide the temperature stabilizer into the opening and tighten the captive thumbscrews (see Figure B-24).

B.4.5 Installing the AM in the DC Upper Compartment

IMPORTANT **Always turn off the DC power before installing an AM.**

1. If the DC power is on, press the **POWER** button on the front of the DC for 2 seconds to turn off the power before continuing.
2. Locate the high-pressure valve labels shipped with the AM.
3. Unscrew the black locking ring on the front of the high-pressure valve. Attach the appropriate label (6-port or 10-port) to the front of the AM. Replace the black locking ring.
4. Pull the DC top component tray all the way forward (see Figure B-28).

Figure B-28. *DC with Top Component Tray Pulled Forward*

5. Locate the pair of mounting brackets (P/N 071260) shipped with the AM.

6. For each bracket, align the two captive screws on the bracket with the openings on the AM component tray. See Figure B-28 for the right-side location and Figure B-29 for the left-side location. Tighten the screws.

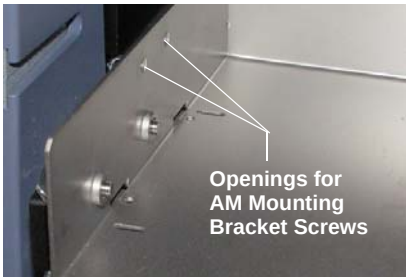


Figure B-29. *Openings for AM Mounting Bracket Screws (Left Side)*

7. Place the AM on the component tray and slide it back into the mounting brackets.
8. Continue sliding until the AM is connected to the electrical receptacle on the back of the DC top component tray (see Figure B-28). Push firmly to seat the AM.
9. Tighten the locking screws in the right and left corners of the AM with a screwdriver. **Do not overtighten the screws.**
10. Push the component tray all the way back into the DC (see Figure B-30).

Figure B-30. *DC with AM Installed*

Capillary IC

B.5 Installing an IC Cube in the DC

IMPORTANT **Always turn off the DC power before installing an IC Cube.**

1. If the DC power is on, press the **POWER** button on the front of the DC for 2 seconds to turn off the power before continuing.
2. Open the DC upper door.
3. Pull out the DC upper compartment tray until it stops.
4. Locate the two IC Cube installation guides (P/N 071264) shipped with the IC Cube.
5. For reference, Figure B-31 shows the completed installation of four guides (for two IC Cubes) installed in the upper compartment of the DC.

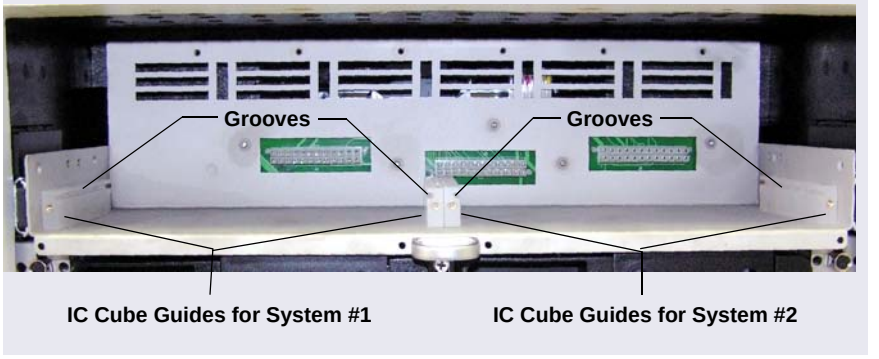


Figure B-31. *IC Cube Guides Installed in DC Upper Compartment*

6. To install an IC Cube guide:

   a. Note that one side of the guide is grooved (see Figure B-32). Also, note the two alignment pegs and the two attachment screws on the bottom of the guide.

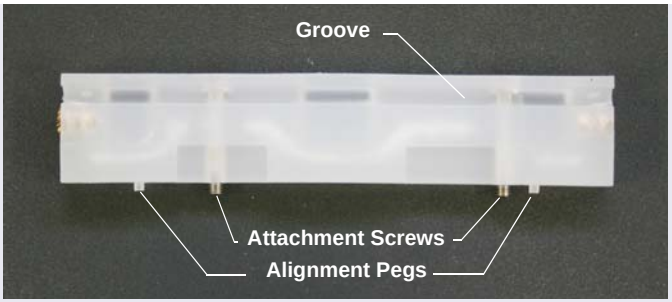


Figure B-32. *IC Cube Guide*

   b. Orient the guide with the grooved edge on top and facing in (toward the IC Cube mounting location) (see Figure B-31). Align the pegs with the openings on the bottom of the DC upper compartment tray. The openings for the guides on the outside edges of the tray are slotted (see Figure B-33). The openings for the guides in the center of the tray are round.

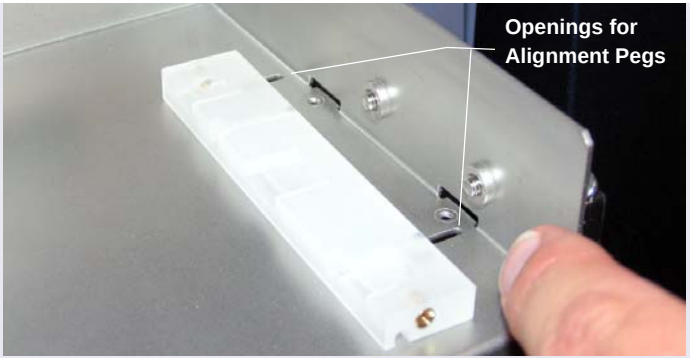


Figure B-33. *Openings for IC Cube Guide Alignment Pegs (Right Side of DC Upper Compartment Tray Shown)*

c. Press the guide onto the tray (see Figure B-29). Use a slotted screwdriver to tighten the attachment screws.

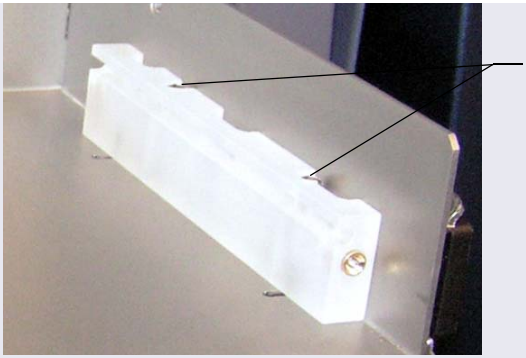


Figure B-34. *IC Cube Guide Installed*

7. Slide the IC Cube into the guides. Push the IC Cube firmly into the back wall of the DC until the connector on the rear of the IC Cube is fully seated.
8. Use a slotted screwdriver to tighten the screws on each side of the IC Cube. This attaches the IC Cube securely to the guides.

NOTE The screws on the front of the IC Cube must be tightened to ensure that the connection between the electrical connector on the rear of the IC Cube and the Dionex ICS-5000+ electronics board is secure.

C • Networking Chromeleon 6.8 Computers

For routine Chromeleon 6.8 operation, the three Chromeleon 6.8 components shown in Figure C-1 (*datasource*, *server*, and *client*) must be able to communicate. These three components can all be installed on one computer, on three different computers, or in any other computer/component configuration. A Chromeleon 6.8 client can communicate with multiple servers and datasources, and multiple servers can share a single datasource.

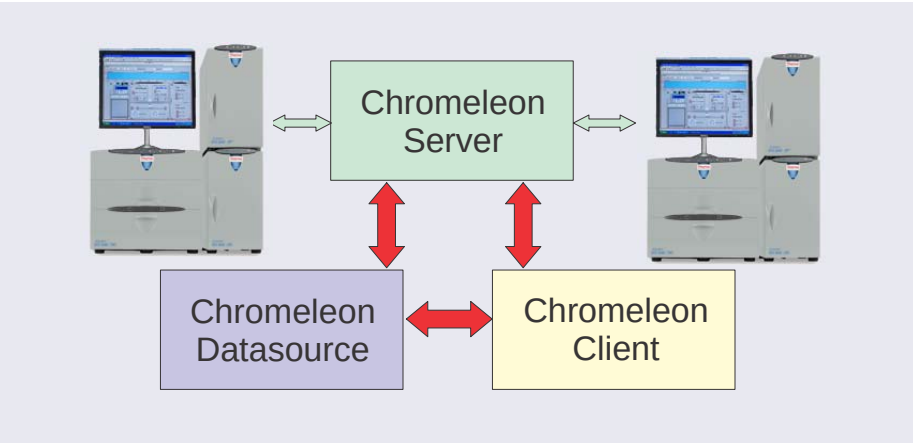


Figure C-1. *Structure of the Basic Chromeleon 6.8 Architecture*

When Chromeleon 6.8 components are installed on the same computer, they communicate automatically. However, when the Chromeleon 6.8 components are installed on different computers, they need to be configured to allow communication. This requires either a peer-to-peer network (a workgroup) or a client/server network (a domain). The computers in a workgroup communicate and share data with each other directly. The computers in a domain share a common set of network resources.

Workgroup Example

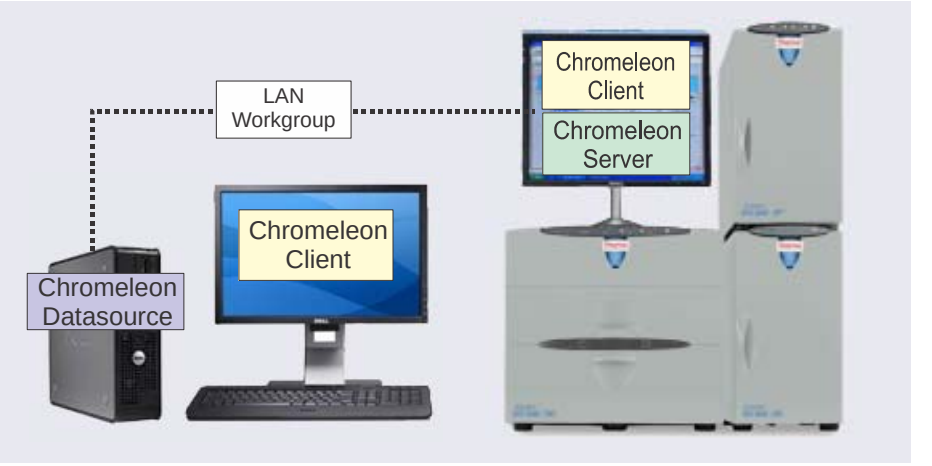


Figure C-2. *Workgroup Example*

This workgroup example consists of the following components:

- One Dionex ICS-5000+ system
- One desktop PC located at the system (not shown), with a monitor installed on the DC. A Chromeleon 6.8 server and client is installed on this PC.
- One desktop PC located in another room. The Chromeleon 6.8 client and datasource are installed on this PC.

The two PCs are connected to each other through a Local Area Network (LAN) and are assigned to the same workgroup. The PC located at the system is used strictly for controlling the system at the bench. Data is transferred automatically to the datasource on the desktop PC. All other instrument control and data management functions are done from the desktop PC.

Domain Example

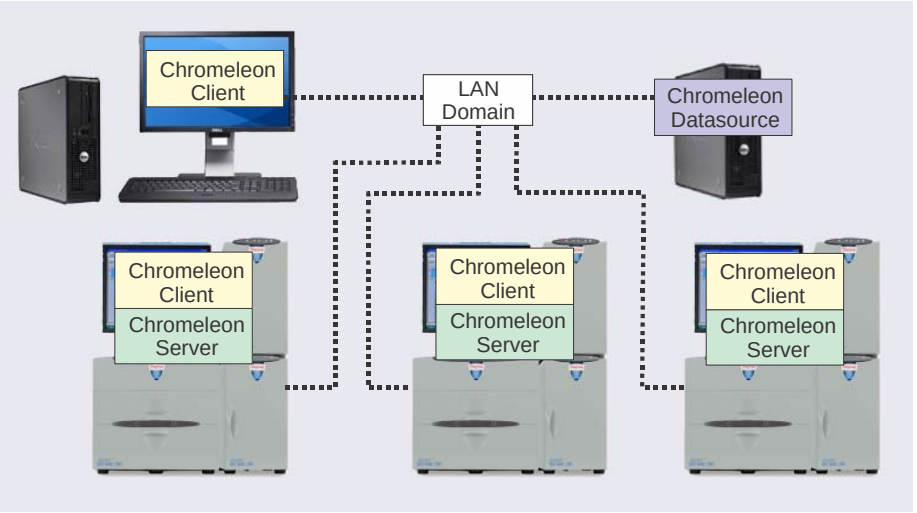


Figure C-3. *Domain Example*

This domain example consists of the following components:

- Three Dionex ICS-5000^{+} systems
- Three desktop PCs located at the systems (not shown), with monitors installed on the DCs
- A network server with a remote (shared) datasource
- One desktop PC located in another room

All four PCs, as wells as the network server, are assigned to the same network domain. The Chromeleon 6.8 client and server are installed on the PC at each system. Data from each system is transferred to the remote datasource. The desktop PC in the other room is used to access data from the three systems and the remote datasource.

Key Points for Setting Up a Workgroup or Domain

- All computers must belong to the same workgroup or domain.
- All remotely accessed datasources must share their parent folder. For example, if the datasource in C:\Chromel\Data will be accessed remotely, C:\Chromel must be shared.

C.1 Setting Up a Shared Datasource

Create a shared datasource if you want multiple clients and/or servers to access a single datasource. Details about how to set up and share a datasource differ slightly for the two network types.

C.1.1 Setting Up a Shared Datasource on a Workgroup

1. In Windows Explorer, right-click the parent folder of the datasource to be shared. For example, if the datasource is in C:\Chromel\Data, right-click C:\Chromel.
2. Click **Sharing and Security** on the context menu.

   The Sharing tab page appears (see Figure C-4).

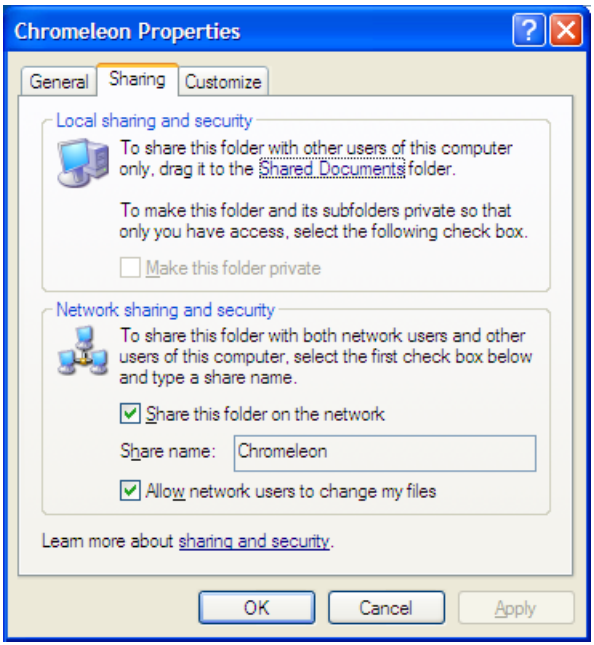


Figure C-4. *Sharing a Folder on a Workgroup*

3. Select the **Share this folder on the network** check box.
4. (Optional) Enter a new name in the **Share** name field.

5. Select the **Allow network users to change my files** check box and click **OK**.

All computers in the workgroup can now access any datasource installed in any subfolder of the shared folder.

C.1.2 Setting Up a Shared Datasource on a Domain

1. In Windows Explorer, create the datasource folder:
   a. Create a new parent folder on the network server (for example, C:\CMDataParent).
   b. Under the new folder, create a subfolder in which to save the data (for example, C:\CMDataParent\Data).
2. Select access rights to the datasource parent folder:
   a. Right-click the parent folder name and click **Properties** on the context menu.
   b. Click the **Security** tab (see Figure C-5).

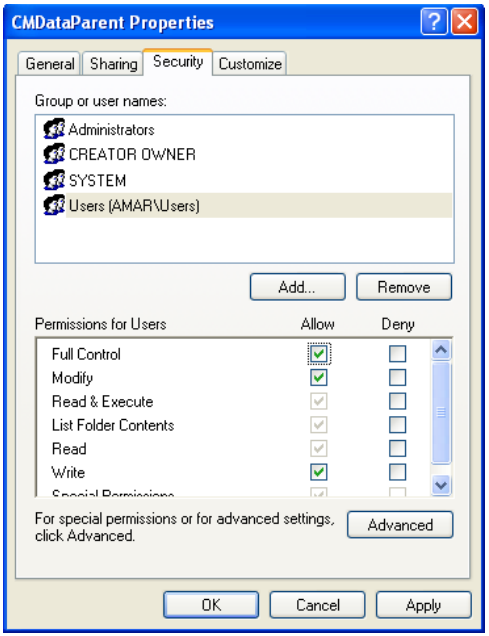


Figure C-5. *Selecting Access Rights to the Datasource Parent Folder*

c. For each user (or user group) that will log in locally to access data or control equipment, select the **Allow Full Control** check box. To add additional users or groups, click **Add**.

d. Click **Apply**.

3. Share the datasource parent folder:

a. In the Properties dialog box, click the **Sharing** tab.

b. Click **Share this folder** (see Figure C-6).

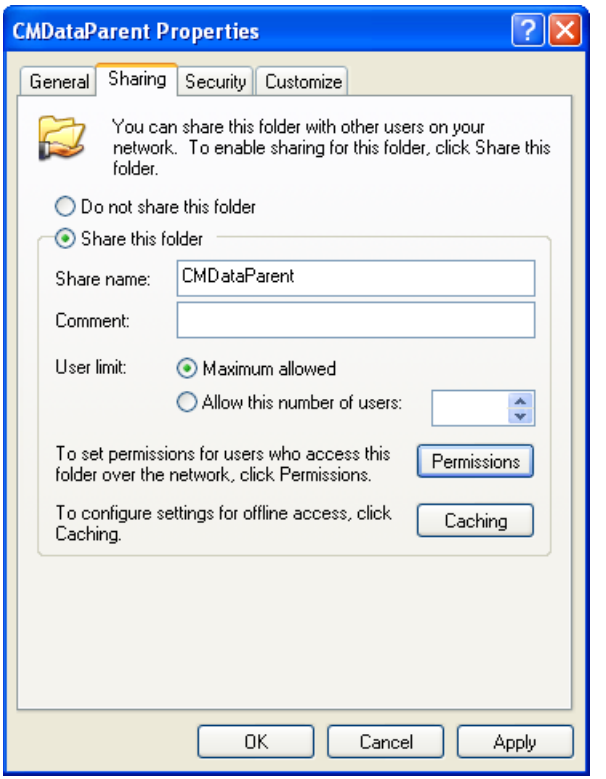


Figure C-6. *Sharing a Folder on a Domain*

c. Click **Permissions** to open the Permissions for dialog box.

d. For each user (or user group) that will need to access the datasource remotely, select the **Full Control** check box.

e. Click **OK**.

4. Create the new database in the Chromeleon 6.8 client:
   a. Open the Chromeleon 6.8 Browser.
   b. On the **File** menu, click **Datasources**. The Datasource Manager dialog box appears.
   c. Click **New**. The New Datasource dialog box appears (see Figure C-7).
   d. Enter a name for the datasource and enter the path to the data folder created in Step 1 (or click **Browse** to navigate to the folder).

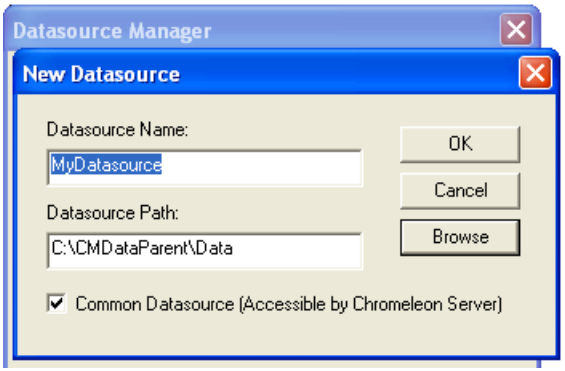


Figure C-7. *Creating a New Datasource*

   e. Select the **Common Datasource (Accessible by Chromeleon 6.8 Server)** check box and click **OK**.
   f. The new datasource appears in the Datasource Manager list.
   g. Click **Close**. The new datasource appears in the Browser.
   h. Restart the Chromeleon 6.8 Server.

C.2 Connecting a Client to a Remote Datasource

1. Open the Chromeleon 6.8 client and go to the Browser.
2. On the **File** menu, click **Mount Datasource** and then click **Browse**.

   The Open dialog box appears.
3. Use the Open dialog box to browse to the network folder where the datasource is located. The datasource is displayed as a Chromeleon 6.8 icon labeled **Database Container.**
4. Click the **Database Container** icon and click **Open**.
5. A message box asks whether the datasource should be made accessible to the Chromeleon 6.8 server.
   - If the local (client) computer is also an instrument server and you want to store data from the server in the new datasource, click **Yes**.
   - If you are connecting the local computer to the datasource only to review data or to copy an existing sequence as a template, click **No**. If you do not, the local instrument server will create timebase folders and store audit logs in the remote datasource.
6. Restart the server.

   The newly connected datasource is displayed at the top level of the folder tree (see Figure C-8). The datasource is now available for use in the Chromeleon 6.8 client.

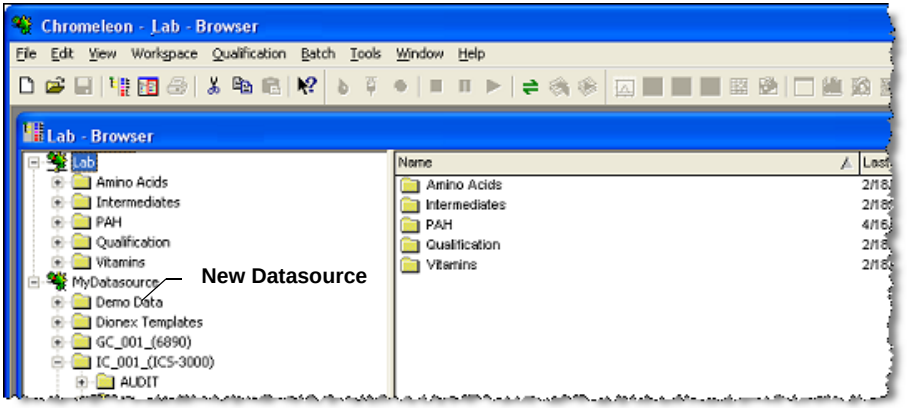


Figure C-8. *Chromeleon 6.8 Client Browser: New Datasource*

C.2.1 Connecting a Server to a Remote Datasource

NOTE The Network Failure Protection option is required for communication between a server and a network datasource. The Network Failure Protection and Multiple Network Control options are bundled together as a single license in Chromeleon 6.8. This license is often simply referred to as Multiple Network Control.

1. Open the Chromeleon 6.8 Server Configuration program.
2. Right-click the server icon in the left pane and click **Properties** on the menu.

   The Server Configuration dialog box appears.
3. Click the **Advanced** tab.
4. The **Standard Datasource** list displays the names of all datasources mounted as common datasources. Select the datasource in which to store the server data.
5. Click **OK**.

C.3 Connecting a Client and Server Through a Network

These instructions explain how to connect a panel tabset on the client to a server on a network. It is also possible to connect individual Control panels on the client to a timebase on a network server. Refer to the Chromeleon 6.8 Help for details.

1. Click the **Default Panel Tabset** button on the standard toolbar (see Figure C-9).

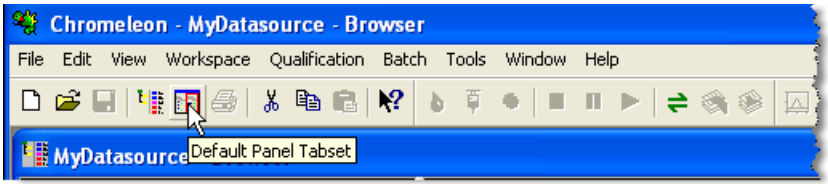


Figure C-9. *Default Panel Tabset Toolbar Button*

The Connect to Chromeleon Server dialog box appears (see Figure C-10).

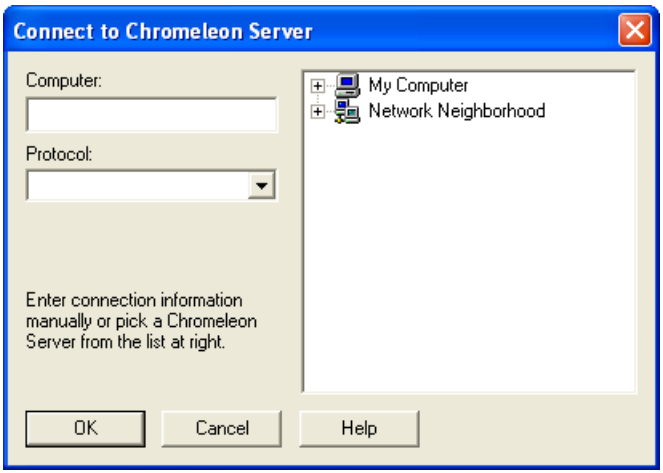


Figure C-10. *Connect to Chromeleon Server Dialog Box*

2. Follow these steps to connect to a Chromeleon 6.8 server on a network computer:

   a. Click the plus sign next to the Network Neighborhood icon.

   b. Navigate to the location of the computer on which the Chromeleon 6.8 server is loaded and running, and click the plus sign next to the computer name.

c. Select the Chromeleon 6.8 Server (see Figure C-11).

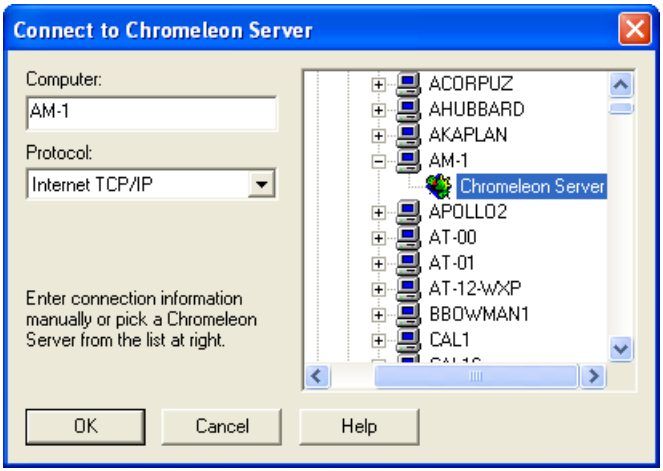


Figure C-11. *Select the Chromeleon 6.8 Server*

3. Under **Protocol**, select the correct option from the drop-down list:
   - For a local computer, select **My Computer**.
   - For a workgroup, select **Windows NT Named Pipes**.
   - For a domain, select **Internet TCP/IP**.
4. Click **OK** to have Chromeleon 6.8 generate the panel tabset.

NOTE After a panel tabset has been created, you cannot change the server to which the tabset is linked.