

# **Dionex ICS-5000 Ion Chromatography System Installation Instructions**

Document No. 065343  
Revision 05  
December 2011

© 2011 by Thermo Fisher Scientific Inc. All rights reserved.

Atlas, Chromeleon, and SRS are registered trademarks of Thermo Fisher Scientific Inc. in the United States.

Microsoft, Windows, Windows 2000, and Windows XP are registered trademarks of Microsoft Corporation in the United States and other countries. Adobe, Acrobat, and Adobe Reader are registered trademarks of Adobe Systems, Incorporated in the United States and other countries.

KIMWIPES is a registered trademark of Kimberly-Clark Worldwide Inc. in the United States and possibly other countries.

PEEK is a trademark of Victrex PLC.

All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.

Thermo Fisher Scientific Inc. provides this document to its customers with a product purchase to use in the product operation. This document is copyright protected and any reproduction of the whole or any part of this document is strictly prohibited, except with the written authorization of Thermo Fisher Scientific Inc.

The contents of this document are subject to change without notice. All technical information in this document is for reference purposes only. System configurations and specifications in this document supersede all previous information received by the purchaser.

**Thermo Fisher Scientific Inc. makes no representations that this document is complete, accurate or error-free and assumes no responsibility and will not be liable for any errors, omissions, damage or loss that might result from any use of this document, even if the information in the document is followed properly.**

This document is not part of any sales contract between Thermo Fisher Scientific Inc. and a purchaser. This document shall in no way govern or modify any Terms and Conditions of Sale, which Terms and Conditions of Sale shall govern all conflicting information between the two documents.

Revision history: Revision 01 released May 2010

Revision 02 released June 2010

Revision 03 released November 2010

Revision 04 released February 2011

Revision 05 released December 2011

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

## 1 • Introduction

1.1	Overview .....	1
1.2	Safety Messages and Notes .....	5
1.3	Facility Requirements .....	7

## 2 • Unpacking Instructions

2.1	Unpacking Guidelines .....	9
2.2	Unpacking the AS Autosampler .....	10
2.3	Unpacking the Dionex ICS-5000 Modules .....	17
2.4	Installing the Safety Support Bracket .....	19
2.5	Removing the Pump Shipping Screws (Optional) .....	20

## 3 • Installation

3.1	Installation Checklist .....	21
3.2	Setting Up the DP/SP .....	24
3.2.1	Filling the Reservoirs and Connecting to the Pump .....	24
3.3	Setting Up the EG (RFIC-EG System Only) .....	27
3.4	Setting Up the DC .....	30
3.4.1	Setting Up the DC for Capillary IC Applications .....	30
3.4.2	Setting Up the DC for Analytical IC Applications .....	36
3.5	Setting Up the TC .....	41

3.5.1	Installing the Temperature Stabilizer in the TC (Optional)	41
3.5.2	Installing the Columns in the TC	43
3.5.3	Installing the TC Column ID (Identification) System	44
3.5.4	Connecting the TC TTLs and Relays (Optional)	45
3.6	Connecting a Dionex AS Autosampler (Optional)	47
3.6.1	Connecting the AS Syringe	47
3.6.2	Connecting the AS in a Capillary IC System	48
3.6.3	Connecting the AS in an Analytical IC System	53
3.7	Connecting a Dionex AS-DV Autosampler (Optional)	56
3.8	Connecting Drain Hoses	56
3.9	Setting Up the Computer	57
3.9.1	Installing a Desktop or Notebook PC	57
3.9.2	Installing a Monitor Arm (Optional)	58
3.10	Setting Up the Chromatography Software	59
3.10.1	Installing the Software and License	59
3.10.2	Chromeleon 7: Starting the Instrument Controller Service	59
3.10.3	Chromeleon 6.8: Starting the Server	59
3.11	Connecting Modules to the Computer	60
3.11.1	USB Cables	60
3.11.2	USB Compatibility Issues	60
3.11.3	USB Connection Examples	62
3.12	Connecting the Power Cords	64
3.13	Installing the USB Device Drivers	65
3.14	Configuring the Modules in Chromeleon	68
3.14.1	Using the USB Auto Configuration Wizard	69

3.14.2	Selecting Configuration Properties .....	71
3.15	Starting the Chromeleon Client .....	75
3.16	Completing the Pump Installation .....	78
3.16.1	Setting Up the Piston Seal Wash System .....	78
3.16.2	Priming the Pump .....	81
3.16.3	Plumbing the Pump Outlet .....	83
3.17	Installation Qualification (Optional) .....	84
3.18	Plumbing a Capillary IC System .....	85
3.18.1	Plumbing the EG for Capillary IC Applications .....	85
3.18.2	Plumbing the DC for Capillary IC Applications .....	90
3.19	Plumbing an Analytical IC System .....	101
3.19.1	Plumbing the EG for Analytical IC Applications .....	101
3.19.2	Plumbing the DC for Analytical IC Applications .....	111
3.19.3	Plumbing the TC for Analytical IC Applications .....	115
3.20	Connecting Waste Lines .....	117
3.20.1	Installing the Gas Separator Waste Tube .....	118
3.21	Equilibrating the System .....	119
3.21.1	Installing a Backpressure Coil .....	121

## **A • Pressurizing Eluent Reservoirs**

A.1	Installing the TC/VWD/PDA Regulator Bracket .....	124
A.2	Connecting the Gas Source .....	124
A.3	Pressurizing the Eluent Reservoir .....	127

## **B • Installing DC Options**

B.1	Installing the ED Amperometry Cell .....	129
B.1.1	Unpacking and Disassembling the Cell .....	129
B.1.2	Installing a Disposable Working Electrode .....	132
B.1.3	Installing a Conventional Working Electrode .....	132
B.1.4	Installing the pH-Ag/AgCl Reference Electrode .....	135
B.1.5	Installing the PdH Reference Electrode in the Cell for Capillary IC Systems .....	140
B.2	Installing Low-Pressure Valves in the DC .....	143
B.2.1	Installing a Low-Pressure Valve on the DC Rear Panel ...	143
B.2.2	Installing a Low-Pressure Valve Inside the DC .....	144
B.3	Installing the Automation Manager (AM) in the DC .....	145
B.3.1	Installing a High-Pressure Valve on the AM .....	147
B.3.2	Installing a Low-Pressure Valve on the AM .....	148
B.3.3	Installing the RCH-1 Reaction Coil Heater on the AM ...	148
B.3.4	Installing the Temperature Stabilizer on the AM .....	149
B.3.5	Installing the AM in the DC Upper Compartment .....	149

## **C • Networking Chromeleon 6.8 Computers**

C.1	Setting Up a Shared Datasource .....	154
C.1.1	Setting Up a Shared Datasource on a Workgroup .....	154
C.1.2	Setting Up a Shared Datasource on a Domain .....	155
C.2	Connecting a Client to a Remote Datasource .....	158
C.2.1	Connecting a Server to a Remote Datasource .....	159
C.3	Connecting a Client and Server Through a Network .....	159

## 1.1 Overview

The modular design of the Thermo Scientific Dionex™ ICS-5000 Ion Chromatography System lets you quickly configure and customize components for a wide range of applications. This manual provides instructions for initial installation of the components that make up typical IC (ion chromatography) 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 IC Cube™
- Dionex ICS-5000 Automation Manager (AM)
- Dionex ICS-5000 Thermal Compartment (TC)
- Dionex AS Autosampler (AS)
- Dionex AS-DV Autosampler (AS-DV)

The table below describes some of the possible system configurations.

System Configuration	Typical Modules and Components Included
Single-Analysis Capillary IC or RFIC-EG System	<ul style="list-style-type: none"> <li>• SP</li> <li>• DC with one Dionex IC Cube and one CD or one ED. The Dionex IC Cube includes a capillary injection valve, a capillary column set, a capillary suppressor (CD only), and a capillary Carbonate Removal Device (CRD) (optional).</li> <li>• AS</li> <li>• <b>For RFIC-EG:</b> EG with one capillary eluent generator cartridge (EGC) and one capillary Continuously-Regenerated Trap Column (CR-TC); DC with one capillary EG degasser (in the Dionex IC Cube)</li> </ul>
Single-Analysis Analytical IC or RFIC-EG System	<ul style="list-style-type: none"> <li>• SP</li> <li>• DC with one CD or ED, one injection valve, one column set, and one suppressor (CD only)</li> <li>-or-</li> <li>• TC with one injection valve, one column set, and one detector (detector choices include: ICS-Series Variable Wavelength Detector (VWD), ICS-Series Photodiode Array Detector (PDA), and MSQ™ Mass Spectrometer)</li> <li>• AS</li> <li>• <b>For RFIC-EG:</b> EG with one EGC, one CR-TC, and one RFIC Eluent Degasser</li> </ul>
Dual-Analysis Capillary IC or RFIC-EG System	<ul style="list-style-type: none"> <li>• DP</li> <li>• DC with two Dionex IC Cubes and two detectors (CD or ED)</li> <li>• AS</li> <li>• <b>For RFIC-EG:</b> EG with two capillary EGCs and two CR-TCs). DC with two capillary EG degassers</li> </ul>



System Configuration	Typical Modules and Components Included
Dual-Analysis Analytical IC or RFIC-EG System	<ul style="list-style-type: none"> <li>• DP</li> <li>• DC with two injection valves, two column sets, and two detectors</li> <li style="text-align: center;">-or-</li> <li>• TC with two injection valves, two column sets, and two detectors</li> <li>• AS</li> <li>• <b>For RFIC-EG:</b> EG with two EGC, CR-TC, and RFIC Eluent Degasser</li> </ul>
Dual-Analysis Capillary and Analytical RFIC-EG Hybrid System	<ul style="list-style-type: none"> <li>• DP with one capillary pump and one analytical pump</li> <li>• DC with one Dionex IC Cube in the upper compartment, one column set and one injection valve in the lower compartment, and two detectors</li> <li>• EG with one capillary EGC and one analytical EGC</li> </ul>

For detailed plumbing diagrams for these configurations, refer to Chapter 3, “Dionex ICS-5000 Configurations,” in the *Dionex ICS-5000 Ion Chromatography System Operator’s Manual* (Document No. 065342). 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*

## 1.2 Safety Messages and Notes

This manual contains warnings and precautionary statements that can prevent personal injury and/or damage to the Dionex ICS-5000 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, could result in death or serious injury.



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



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.

### 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.

### Notes

Informational messages also appear throughout this 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 with the Capillary IC flag indicate that the information in the section applies to capillary IC systems only.

Analytical  
IC

Sections preceded with the Analytical IC flag indicate that the information in the section 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.

## 1.3 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 the *ICS-5000 Ion Chromatography System Operator's Manual* (Document No. 065342) 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 Dionex ICS-5000 system components.
- Provide a sturdy, vibration-free workbench 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 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/po<sup>2</sup>).**



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

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

## 2 • Unpacking Instructions

---

### 2.1 Unpacking Guidelines

- Unpack modules in the following order (this order reflects the left-to-right location of modules in the installed system):

AS Autosampler (AS)

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:

DC Injection Valve Panel

Thermo Scientific Dionex IC Cube (Dionex IC Cube) or Dionex ICS-5000 Automation Manager (AM)

Dionex ICS-5000 Conductivity Detector (CD) and/or Dionex ICS-5000 Electrochemical Detector (ED)

Thermo Scientific Dionex EO Eluent Organizer (Dionex EO Eluent Organizer)

- 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.

For step-by-step unpacking instructions for the AS Autosampler, go to [Section 2.2](#).

For step-by-step unpacking instructions for the Dionex ICS-5000 modules, go to [Section 2.3](#).

## 2.2 Unpacking the AS Autosampler



Two or more persons must lift the AS, which weighs more than 18 kg (40 lb). Lift the AS only from each side of the cabinet bottom. Lifting from the front door will damage the door hinges.



Au moins deux personnes peuvent soulever l'AS, qui pèse plus de 18 kg (40 lb). Ne soulevez l'AS que par chaque côté du fond de l'armoire. Son soulèvement par la porte du panneau avant endommagera les charnières de la porte.



Der AS wiegt über 18 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. Remove the outer cardboard sheath and Ship Kit spacer (see [Figure 2-1](#) and [Figure 2-2](#)).



**Figure 2-1.** Fully-packed AS with foam spacer on top of geometric foam pack

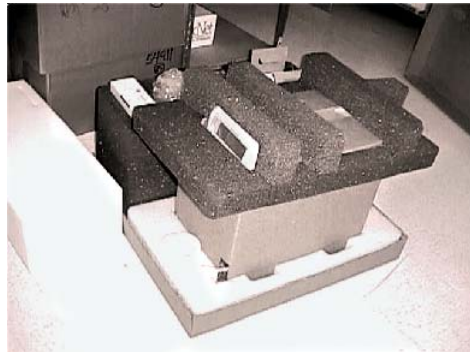


**Figure 2-2.** AS and Ship Kit with outer cardboard sheath and Ship Kit spacer removed



2. Remove the foam top cap (see [Figure 2-3](#)).

**Note:** The AS is inserted into the bottom foam layer of the main shipping container. The tubing is coiled in front of the AS (see [Figure 2-4](#)).



**Figure 2-3.** AS with foam top cap installed

3. Using the handholds in the cradle (see [Figure 2-4](#)), place the AS on the bench.



**Figure 2-4.** AS in cradle with sleeve

4. Remove the sleeve (see [Figure 2-5](#)).

**Note:** The rear edge of the cradle and the rear edge of the AS are aligned.



**Figure 2-5.** AS sitting on cradle (with sleeve removed)

5. Remove the polyethylene bag (see [Figure 2-6](#)). Be careful not to damage the drain tube.



**Figure 2-6.** AS fully wrapped and taped within polyethylene bag

**Note:** The rear of the AS is aligned with the rear edge of the foam (see [Figure 2-7](#)).



**Figure 2-7.** AS sitting on foam spacer inside polyethylene bag

6. Remove the masking tape (see [Figure 2-8](#)).



**Figure 2-8.** 5 cm (2 in) wide masking tape securing tubing within recess at rear of AS

7. Remove the coiled tubing inside the recess (see [Figure 2-9](#)). Be careful not to damage the tubing.
8. Pull enough of the inlet tubing through the AS to connect to the syringe and reservoir organizer.



**Figure 2-9.** Coiled inlet tubing inserted into recess at rear of AS

9. Remove the items from the geometric foam pack (see [Figure 2-10](#)).



**Figure 2-10.** Typical items included in Ship Kit geometric foam pack

10. Undo the ties and remove the polyethylene bags (see [Figure 2-11](#)).



**Figure 2-11.** Dual syringes in bags

11. Open the front of the sheath (see [Figure 2-12](#)), and use the handles to set the pack and syringes on top of the AS.
12. Remove the foam insert.



***Figure 2-12. Dual syringes with bags removed***

13. Slide the syringes into position (see [Figure 2-13](#)).



***Figure 2-13. Fully-assembled dual syringes with bottles***

14. Open the AS door. Remove the tie, the two M3 Allen cap screws, and the bracket (see [Figure 2-14](#) and [Figure 2-15](#)).



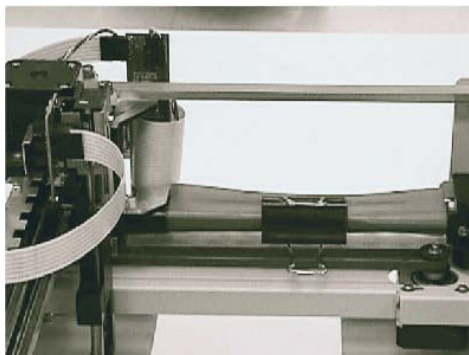
**Figure 2-14.** Shipping bracket hooked into frame and attached to sample arm and chassis with screws



**Figure 2-15.** Shipping bracket with M3 Allen cap screws

15. Remove the clip and sleeve (see [Figure 2-16](#), [Figure 2-17](#), and [Figure 2-18](#)).

**Note:** Save the clip and sleeve. You will need them in future if the autosampler is shipped.

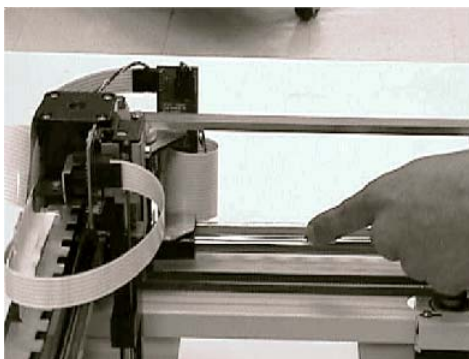


**Figure 2-16.** Polyethylene sleeve assembled (clipped) to shaft to prevent sample arm movement during shipment



**Figure 2-17.** Polyethylene sleeve and clip

**Remember to save the shipping container and all packing material.**



**Figure 2-18.** Shaft with polyethylene sleeve removed

## 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](#).



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).



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).



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 2-19](#)).



**Figure 2-19.** Fully-packed module with foam spacer on top

2. Remove the Ship Kit from the shipping container (see [Figure 2-20](#)).
3. Using the handholds in the cardboard cradle, remove the module from the shipping container.



**Figure 2-20.** Ship Kit packed with module

4. Place the module on the bench (see [Figure 2-21](#)).
5. Raise the front of the module about 5 cm (2 in) and remove the cardboard cradle.



**Figure 2-21.** Module sitting on cardboard cradle

6. Remove the polyethylene bag the module is shipped in.
7. Check that the main power switch on the rear panel is turned off.

**Remember to save all shipping containers and packing material.**



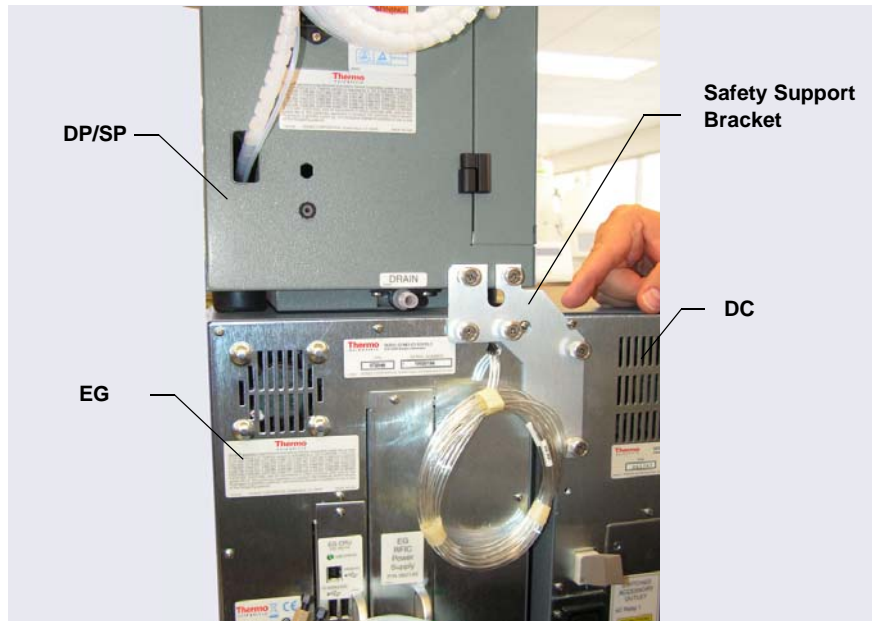
## 2.4 Installing the Safety Support Bracket

The safety support bracket (P/N 062225) 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 3.9.2](#)).

1. Locate the safety support bracket in the DC Ship Kit (P/N 072011).
2. Hold the safety support bracket firmly against the rear panels of the adjacent modules (see [Figure 2-22](#)).
3. Tighten the captive thumbscrews.

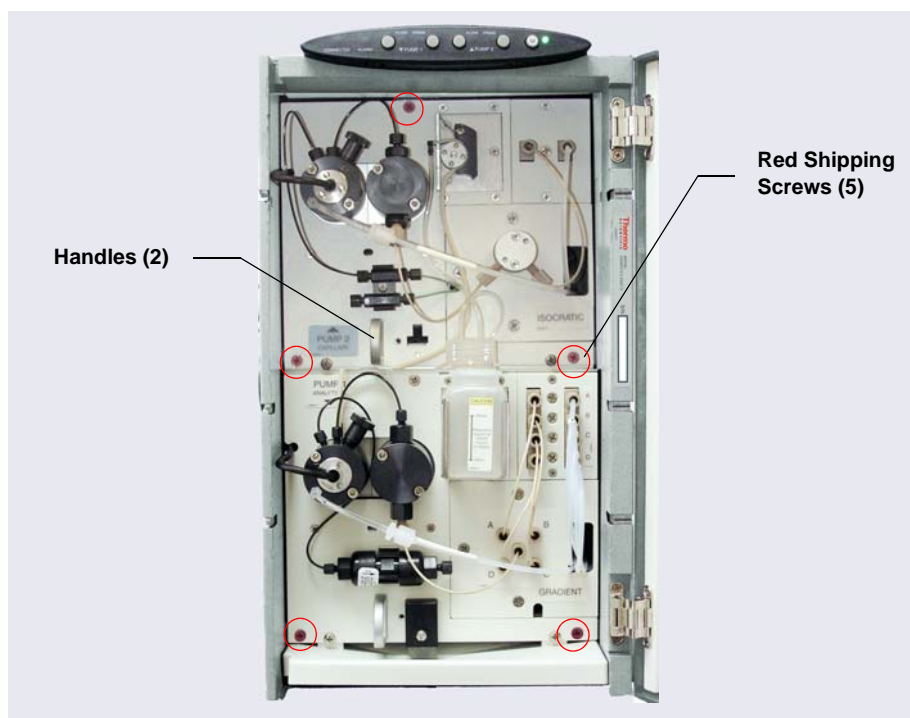


**Figure 2-22.** Orientation of the Safety Support Bracket (Rear Panels of Modules Shown)

## **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 2-23.** Removing Pump Shipping Screws

## 3 • Installation

---

Follow the Thermo Scientific Dionex ICS-5000 Ion Chromatography System installation instructions in this chapter step-by-step, in the order presented. These instructions have been carefully developed to ensure that the system installation is successful.

### 3.1 Installation Checklist

Installation Step	Page
<input type="checkbox"/> Set up the pump	<a href="#">page 24</a>
<input type="checkbox"/> Set up the EG (RFIC-EG system only)	<a href="#">page 27</a>
<input type="checkbox"/> Set up the DC or TC DC (capillary IC system) DC (analytical IC system) TC (analytical IC system)	<a href="#">page 30</a> <a href="#">page 36</a> <a href="#">page 41</a>
<input type="checkbox"/> (Optional) Set up the autosampler AS AS-DV	<a href="#">page 47</a> <a href="#">page 56</a>
<input type="checkbox"/> Connect drain hoses	<a href="#">page 56</a>
<input type="checkbox"/> Set up the computer	<a href="#">page 57</a>
<input type="checkbox"/> Set up Chromeleon™ chromatography software	<a href="#">page 59</a>
<input type="checkbox"/> Connect modules to the computer	<a href="#">page 60</a>
<input type="checkbox"/> Connect the power cords and turn on the power	<a href="#">page 64</a>
<input type="checkbox"/> Install the USB device drivers	<a href="#">page 65</a>
<input type="checkbox"/> Configure the modules in Chromeleon	<a href="#">page 68</a>
<input type="checkbox"/> Start the Chromeleon client	<a href="#">page 75</a>
<input type="checkbox"/> Set up the seal wash and prime the pump	<a href="#">page 78</a>
<input type="checkbox"/> Plumb the system Capillary IC system Analytical IC system	<a href="#">page 85</a> <a href="#">page 101</a>
<input type="checkbox"/> Connect waste lines	<a href="#">page 117</a>
<input type="checkbox"/> Equilibrate the system	<a href="#">page 119</a>

### Notes on USB Connections

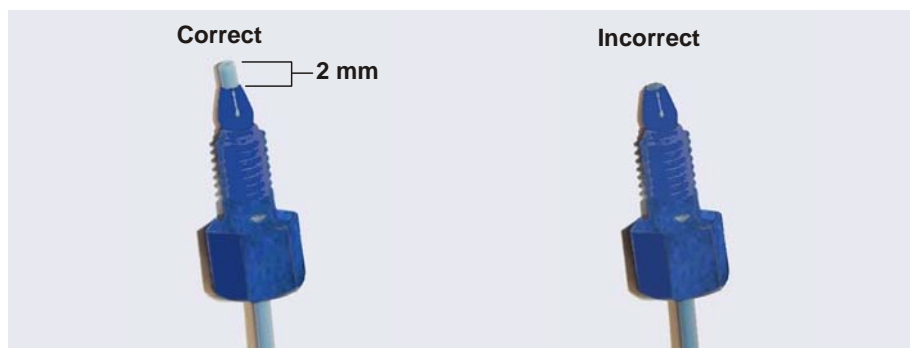
Always install Chromeleon *before* connecting the USB (Universal Serial Bus) cables and turning on the power to the modules and the PC. This ensures that the USB driver for the modules is automatically loaded and the Windows<sup>®</sup> operating system can detect the new modules when their power is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

Capillary  
IC

### Notes on Connecting Capillary Tube Fittings

When connecting precision cut 0.062 mm (0.0025 in) ID blue PEEK<sup>™</sup> tubing (capillary tubing) to a port, make sure the ferrule and fitting bolt 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.

[Figure 3-1](#) illustrates the correct and incorrect placement of the ferrule and fitting bolt on the tubing.



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

Follow the steps below to install capillary 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.



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



3. While maintaining pressure on the tubing to keep it in place in the port, tighten the fitting bolt fingertight.
4. If you are installing a high-pressure fitting (blue bolt and ferrule), follow the instructions below to tighten the fitting.

**Capillary  
IC****Tightening Guidelines for High-Pressure Fittings**

Follow these guidelines when tightening a high-pressure fitting bolt (P/N 074449) and high-pressure ferrule (P/N 074373):

1. First, use your fingers to tighten the fitting bolt as tight as you can. Then, use a wrench to tighten the fitting an additional 3/4 turn (270 degrees).
2. If leaks occur, replace the fitting bolt, ferrule, and tubing.

## 3.2 Setting Up the DP/SP

### 3.2.1 Filling the Reservoirs and Connecting to the Pump

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.**

1. Rinse the eluent reservoir with ASTM Type I (or better) (18 megohm-cm) filtered and deionized water that meets the specifications in [Table 1-1](#).

**NOTE** Always use ASTM filtered, Type I (18 megohm-cm) deionized water to prepare eluent and regenerant or to rinse eluent reservoirs.

2. Fill the reservoir with ASTM Type I (or better) (18 megohm-cm) filtered and deionized water. Deionized water is used to condition and hydrate consumable devices (EGC, CR-TC, suppressor) and to flush the system during Installation Qualification (IQ) (if performed). For RFIC-EG systems, deionized water is also used for eluent generation.

**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).

3. Place the reservoir in the Thermo Scientific Dionex EO Eluent Organizer (Dionex EO Eluent Organizer):
  - Dionex EO Eluent Organizer with four 2-liter reservoirs (P/N 072058)
  - Dionex EO Eluent Organizer with two 2-liter reservoirs (P/N 072057)
  - Dionex EO Eluent Organizer without reservoirs (P/N 072059)

If a Dionex EO Eluent Organizer is not available, place the reservoir in appropriate secondary containment.

4. Locate the end-line filters (P/N 045987) 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

5. Thoroughly rinse the end-line filter with ASTM Type I (18 megohm-cm) filtered and deionized water to remove any loose particles.
6. Install an end-line filter on the end of the reservoir's eluent line.
7. 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.

8. Connect the liquid lines from the DP/SP to the appropriate eluent reservoirs. 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](#).

10. If you are installing an EG, go on to [Section 3.3](#).

If you are not installing an EG, go on to:

- [Section 3.4.1](#) to set up a DC for capillary IC
- [Section 3.4.2](#) to set up a DC for analytical IC
- [Section 3.5](#) to set up a TC



### 3.3 Setting Up the EG (RFIC-EG System Only)

1. Open the EG door.
2. Pull the tray forward until it reaches the stop.
3. Remove the EGC and the continuously regenerated trap column (CR-TC) from their shipping containers.



The 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.



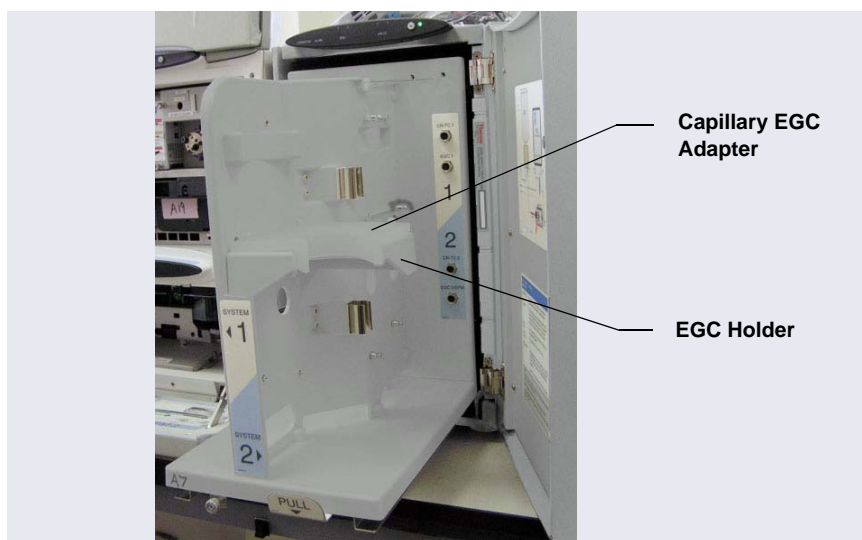
La cartouche d'EGC contient un de ce qui suit: une base corrosive (KOH, LiOH, ou NaOH), un acide corrosif (MSA), ou une solution concentrée de  $K_2CO_3$ . Porter des lunettes et des gants protectives en manipulant la cartouche.



Die 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.

Capillary  
IC

4. Locate the capillary IC EGC adapter (P/N 072133) in the EG Ship Kit (P/N 072047). Install the adapter on top of the EGC holder (see [Figure 3-2](#)).



**Figure 3-2.** Capillary IC EGC Adapter Installed

5. Orient the EGC with the electrolyte reservoir on top and slide it down into the holder (see [Figure 3-3](#)).

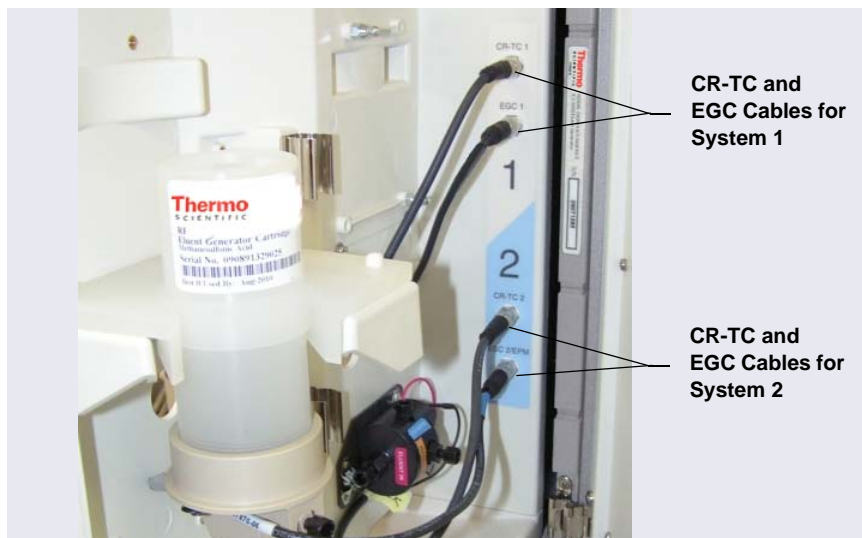


**Figure 3-3.** EGC Installed in Holder  
(Capillary and Analytical EGC Versions Shown)

6. If you are installing system 1, route the EGC electrical cable to the right side of the EG tray.
7. Push the EGC electrical cable firmly onto the **EGC 1** (or **EGC 2**) bulkhead connector (see [Figure 3-4](#)). Twist the ring on the cable connector fingertight to secure it.
8. If you are installing system 1, orient the CR-TC with the **Eluent In** port (yellow label) toward the front of the EG and push the CR-TC firmly onto the ball studs on the left side of the EG. Route the cable to the right side of the EG tray.

If you are installing system 2, orient the CR-TC with the **Eluent In** port (yellow label) toward the back of the EG and push the CR-TC firmly onto the ball studs on the right side of the EG.

9. Push the CR-TC electrical cable firmly onto the **CR-TC 1** (or **CR-TC 2**) bulkhead connector (see [Figure 3-4](#)). Twist the ring on the cable connector fingertight to secure it.



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

10. If you are installing a DC for capillary IC, go on to [Section 3.4.1](#).  
If you are installing a DC for analytical IC, go on to [Section 3.4.2](#).  
If you are installing a TC, go on to [Section 3.5](#).

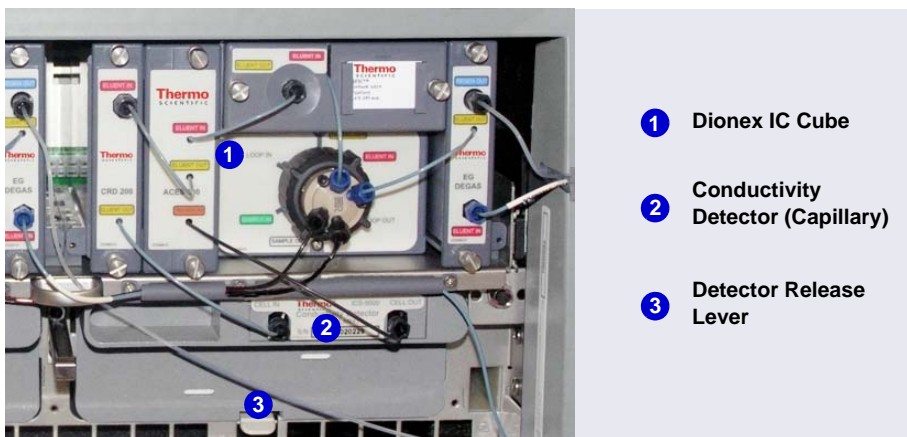
## 3.4 Setting Up the DC

Capillary  
IC

### 3.4.1 Setting Up the DC for Capillary IC Applications

**NOTE** For instructions on setting up the DC for analytical IC applications, see [Section 3.4.2](#).

[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 Dionex IC Cube connections is cut at the factory using a specialized precision cutter. Do not cut this tubing or substitute different tubing.

Capillary  
IC**Installing the Detector in the DC**

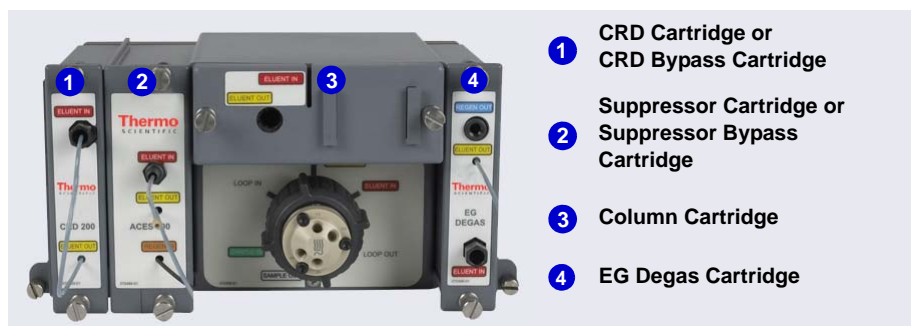
1. Insert the capillary CD (P/N 072041) or ED into the upper compartment of the DC (see [Figure 3-5](#)).
  - For a single-system configuration, it does not matter on which side of the compartment the detector is installed.
  - For a dual-system configuration, install the detector for system #1 on the left side and the detector for system #2 on the right side.
2. 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.

**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.**

Capillary  
IC**Installing the IC Cube Component Cartridges**

For reference, [Figure 3-6](#) shows the Dionex IC Cube after all component cartridges have been installed.



**Figure 3-6.** *Dionex IC Cube with Cartridges Installed*

Capillary  
IC

### Installing the EG Degas Cartridge

Slide the EG degas cartridge into the right-most slot of the Dionex IC Cube (see [Figure 3-6](#)) and then tighten the thumbscrews.

Capillary  
IC

### Installing the Suppressor Cartridge

The suppressor cartridge is used for conductivity detection only. If you are not installing a suppressor, leave the suppressor bypass cartridge in place and go on to [“Installing a Dionex IC Cube in the DC” on page 33](#).

1. Loosen the thumbscrews on the suppressor bypass cartridge and pull the cartridge out of the Dionex IC Cube.

**NOTE** Save the bypass cartridge. It must be reinstalled if the Dionex IC Cube is ever used for an application that does not require a suppressor.

2. Slide the suppressor cartridge into the Dionex IC Cube (see [Figure 3-6](#)). Push the cartridge firmly into the Dionex IC Cube and then tighten the thumbscrews.

Capillary  
IC

### Installing the CRD Cartridge

The CRD cartridge is an option for anion applications only. If you are not installing a CRD, leave the CRD bypass cartridge in place and go on to [“Installing a Dionex IC Cube in the DC” on page 33](#).

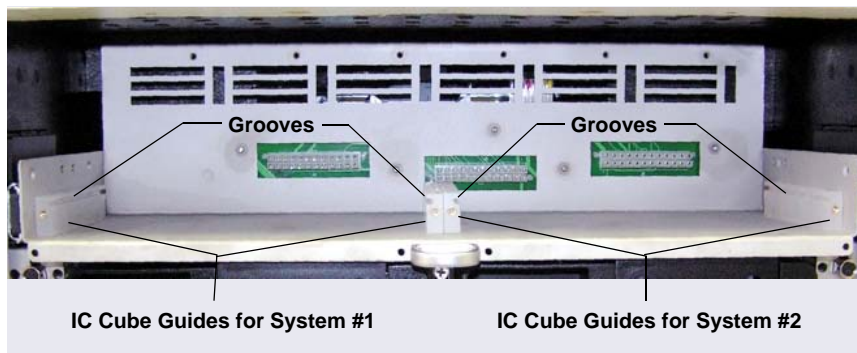
1. Loosen the thumbscrews on the front of the CRD bypass cartridge and pull the cartridge out of the Dionex IC Cube.

**NOTE** Save the bypass cartridge. It must be reinstalled if the Dionex IC Cube is ever used for an application that does not require a CRD.

2. Slide the CRD cartridge into the Dionex IC Cube (see [Figure 3-6](#)). Push the cartridge firmly into the Dionex IC Cube and then tighten the thumbscrews.

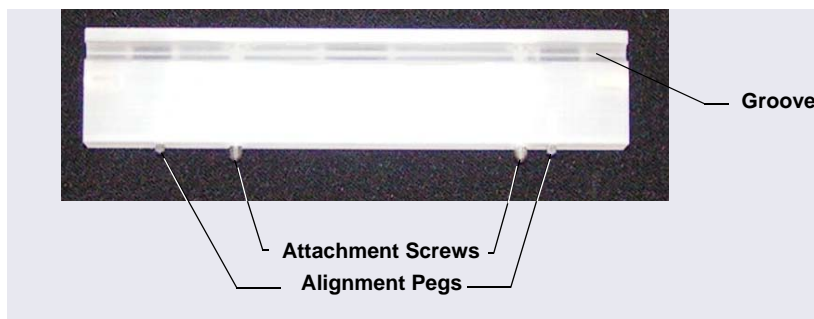
Capillary  
IC**Installing a Dionex IC Cube in the DC****IMPORTANT****Always turn off the DC power before installing a Dionex IC Cube.**

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 Dionex IC Cube installation guides (P/N 071264) shipped with the Dionex IC Cube.
5. For reference, [Figure 3-7](#) shows the completed installation of four guides (for two Dionex IC Cubes) installed in the upper compartment of the DC.



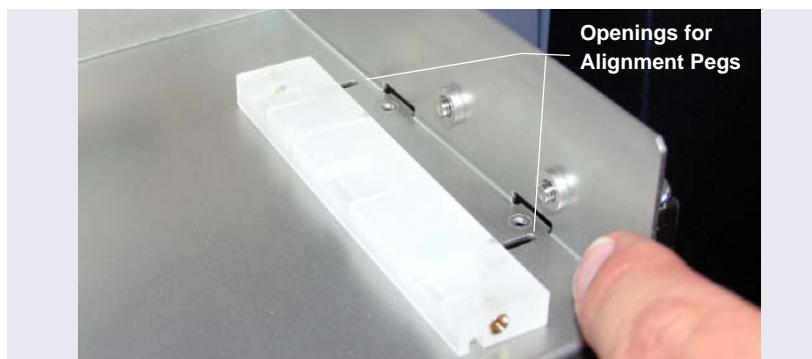
**Figure 3-7.** *Dionex IC Cube Guides Installed in DC Upper Compartment*

6. To install a Dionex IC Cube guide:
  - a. Note that one side of the guide is grooved (see [Figure 3-8](#)). Also, note the two alignment pegs and the two attachment screws on the bottom of the guide.



**Figure 3-8.** *Dionex IC Cube Guide Installed*

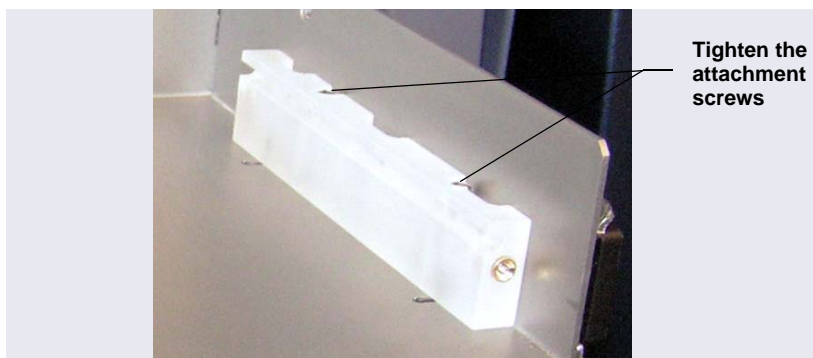
- b. Orient the guide with the grooved edge on top and facing in (toward the Dionex IC Cube mounting location) (see [Figure 3-7](#)). Align the pegs with the openings on the bottom of the DC upper compartment tray. The openings for the guides on the outside edges of the tray are slotted (see [Figure 3-9](#)). The openings for the guides in the center of the tray are round.



**Figure 3-9.** *Openings for Dionex IC Cube Guide Alignment Pegs (Right Side of DC Upper Compartment Tray Shown)*



- c. Press the guide onto the tray (see [Figure 3-10](#)). Use a slotted screwdriver to tighten the attachment screws.



**Figure 3-10.** *Dionex IC Cube Guide Installed*

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

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

9. If you are installing a Thermo Fisher Scientific Dionex AS Autosampler, go on to [Section 3.6](#). If you are installing a Thermo Fisher Scientific Dionex AS-DV Autosampler, go on to [Section 3.7](#). If you are not installing an autosampler, go on to [Section 3.8](#).

### 3.4.2 Setting Up the DC for Analytical IC Applications

Figure 3-11 is an example of the interior of the DC after the components for two analytical IC systems have been installed.

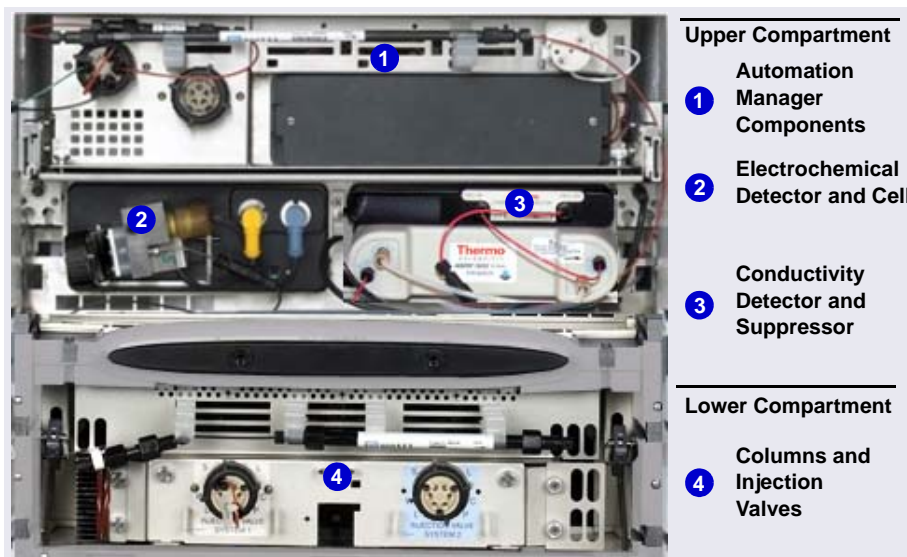


Figure 3-11. Example DC Interior View: Dual-Analytical System

#### 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		062661
2		062662
0	Standard Bore	063776
1		063774
2		063775

Table 3-1. Injection Valve Panels

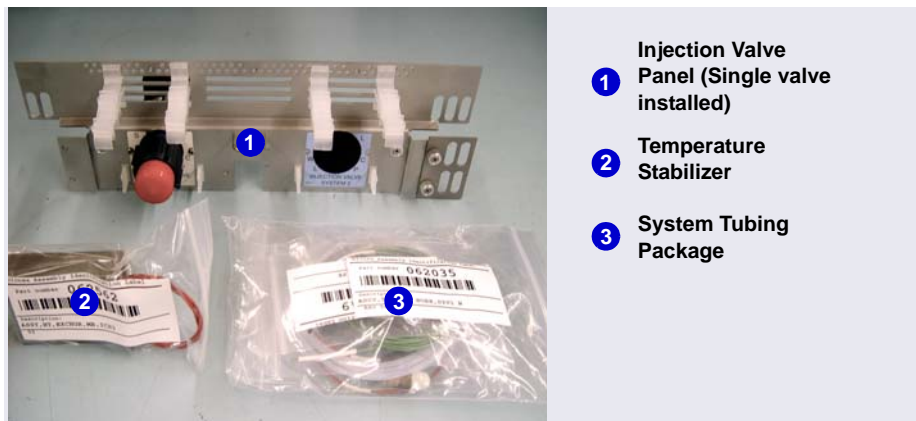
Each panel is shipped with the following items:

- A temperature stabilizer, 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	062031
	2	Blue	062062

**Table 3-2.** System Tubing Packages

[Figure 3-12](#) shows the components shipped with a single-valve panel.

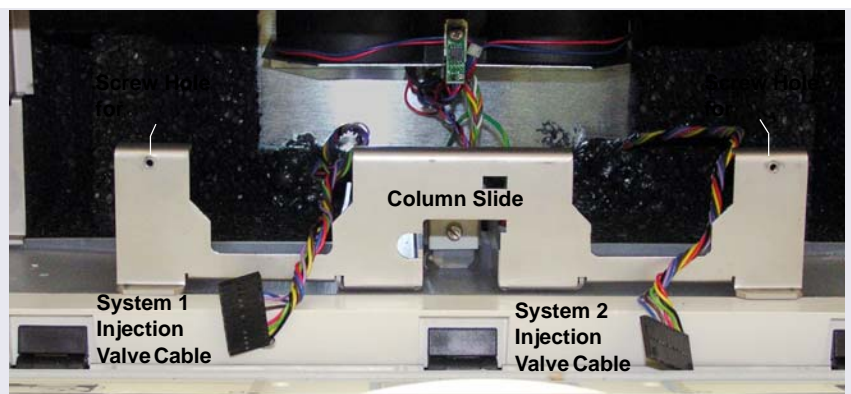


**Figure 3-12.** Injection Valve Panel Ship Kit: Single-Valve Configuration

**IMPORTANT**

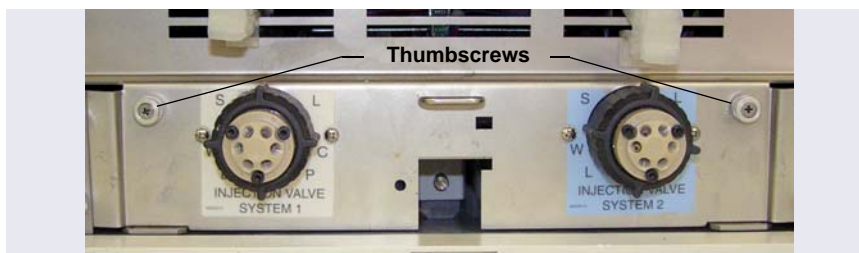
Always turn off the DC power before installing a valve panel.

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 3-13](#)).



**Figure 3-13.** DC Lower Compartment Column Slide and Injection Valve Cables

4. Connect the system 1 injection valve cable (labeled **SYS 1**) (see [Figure 3-13](#)) 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 3-14](#)) with the screw holes on the column slide (see [Figure 3-13](#)).
6. While holding the column slide in place, tighten the thumbscrews to secure the panel onto the column slide.



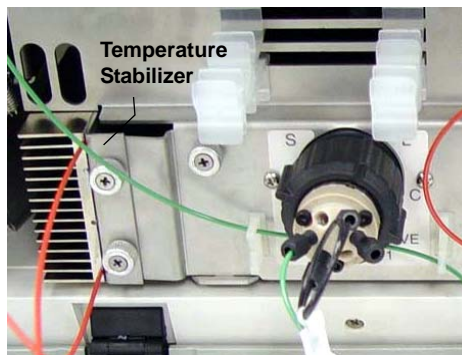
**Figure 3-14.** DC Lower Compartment Injection Valve Panel: Dual-Valve Configuration

Analytical  
IC**Installing the Temperature Stabilizer**

Install the temperature stabilizer for system 1 (or a single system) on the left side of the injection valve panel. 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 3-15](#) shows a temperature stabilizer installed on the left side of the valve panel.



**Figure 3-15.** *Temperature Stabilizer Installed on the Left Side of the Injection Valve Panel*

Analytical  
IC**Installing the Detector in the DC**

**NOTE** If you are installing an ED (P/N 072043), first follow the instructions in [Section B.1](#) to install the ED cell and connect it to the ED.

1. Install the CD (P/N 061716) and/or ED in the upper compartment of the DC (see [Figure 3-11](#)).
  - 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.
2. 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.

**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

**Installing the Suppressor in the DC**

1. Orient the suppressor with the **ELUENT IN** port on the bottom.
2. Press the suppressor against the back of the CD (below the cell) and slide the suppressor to the right to secure it onto the mounting tabs on 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 3-16](#)).



**Figure 3-16.** *Installing the Suppressor (Left-Side Installation)*

If you need to remove a 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 AS, go on to [Section 3.6](#).

If you are installing an AS-DV, go on to [Section 3.7](#).

If you are not installing an autosampler, go on to [Section 3.8](#).

## 3.5 Setting Up the TC

**NOTE** The TC cannot be configured for capillary IC applications.

### 3.5.1 Installing the Temperature Stabilizer in the TC (Optional)

The TC contains four column brackets preinstalled 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 3-17](#)).

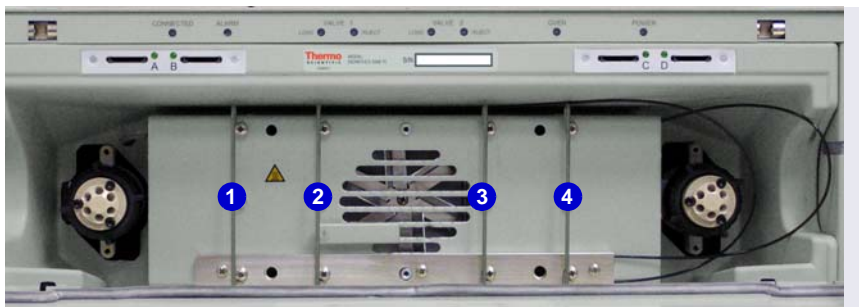


**Figure 3-17.** TC Column Bracket Positions

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 3-17](#)).
  - 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 3-18](#) shows a temperature stabilizer installed on the bottom edge.



**Figure 3-18.** TC Temperature Stabilizer Installed

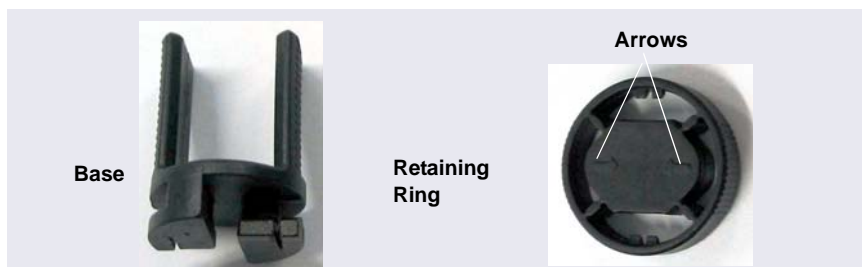
4. Repeat [Step 3](#) for the second temperature stabilizer, if needed.
5. Reinstall the column brackets in the TC as follows:
  - a. Check that the outside edge of the temperature stabilizer is flush with the edge of the thermal element.
  - b. While holding the temperature stabilizer in place, attach 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.



### 3.5.2 Installing the Columns in the TC

The TC can hold up to three analytical 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. The 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 3-19](#)).
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 3-19.** TC Column Clips

6. Attach the base of the clip to a column bracket, and then rotate the clip 90° clockwise (see [Figure 3-20](#)).
7. Press the column into the clip and reinstall the ring.



**Figure 3-20.** Column Clips Installed

### 3.5.3 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 [Section 3.14.2](#)).
- After setting up the chromatography software, close the TC door and select the column properties to be monitored (see [page 45](#)).

#### 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 3-21](#)).



**Figure 3-21.** 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 3-22](#)).

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



**Figure 3-22.** Inserting a Column ID Chip Card

3. Install the other chip card.

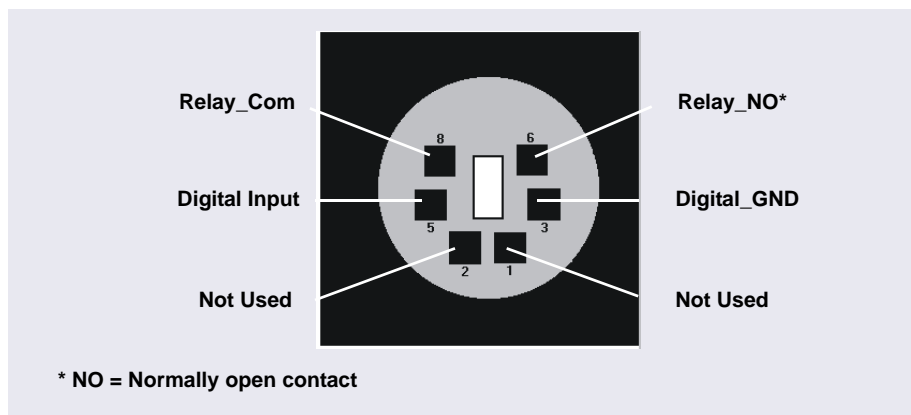
Analytical  
IC**Selecting the Column Properties to Monitor**

**NOTE** Complete this section after adding the TC to the instrument (or timebase) (see [Section 3.14](#)) and configuring the columns in Chromeleon (see [Section 3.14.2](#)).

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**.

Analytical  
IC**3.5.4 Connecting the TC TTLs and Relays (Optional)**

The two 6-pin mini-DIN connectors on the TC rear panel can be used to exchange digital signals with any external device capable of being controlled through a relay or TTL input. The two connectors are identical in function.



**Figure 3-23.** Digital I/O Connector

When the relay is activated, the connection is between Com and NO.

Connection	Description
Digital Input <----> Digital_GND	0 to +5 V
Relay_Com <----> Relay_NO	Switching voltage: 100 VDC Switching current: 0.25 A Carry current: 1.0 A Switching capacity: 3 W Contact resistance: Max. 150 megohms

For details about the pin assignments, refer to [Table 3-3](#):

Pin	Signal Name	Signal Level	Core Color	Core Label
1	Not occupied	----	Pink	Analog High
2	Not occupied	----	Gray	Analog Low
3	Digital_GND	0 V	Green	Digital GND
5	Digital Input	0 to +5 V	Yellow	Digital Input
6	Relay_NO	100 V <sub>DC</sub> /0.25 A/3 W	Brown	Digital Output
8	Relay_Com	100 V <sub>DC</sub> /0.25 A/3 W	White	Dig./Out (GND)
			Black	Shield

**Table 3-3.** Pin Assignments for the TC Mini-DIN Signal Cable

1. Turn off the main power switch on the rear panel of the TC.
2. Locate the 6-pin mini-DIN cable (P/N 6000.1004) provided in the TC Ship Kit (P/N 064789).
3. Plug the cable's 6-pin connector into the digital I/O port on the TC rear panel.
4. For each relay output or TTL input to be used, connect the appropriate signal wire and ground wire to the corresponding connectors on the external device. Refer to the documentation provided with the external device for instructions.
5. Turn on the TC power.
6. When configuring the TC in Chromeleon (see [Section 3.14](#)), enable the corresponding relay output and/or TTL input on the **Relays** and/or **Inputs** page of the Properties dialog box.

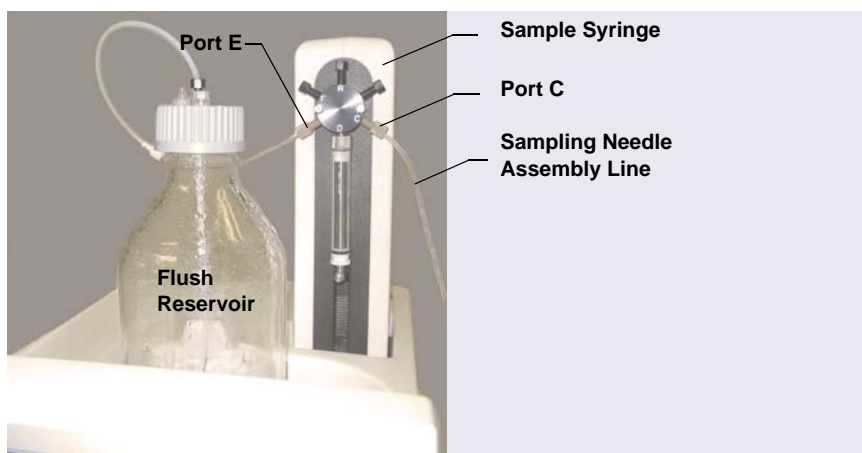
7. If you are installing an AS, go on to [Section 3.6](#).  
If you are installing an AS-DV, go on to [Section 3.7](#).  
If you are not installing an autosampler, go on to [Section 3.8](#).

## 3.6 Connecting a Dionex AS Autosampler (Optional)

This section provides brief installation instructions for the AS Autosampler. For details, refer to the *AS Autosampler Operator's Manual* (Document No. 065051), provided on the Thermo Scientific Reference Library DVD (P/N 053891).

### 3.6.1 Connecting the AS Syringe

1. Place the AS to the left of the DC (or TC) on the workbench.
2. Remove the plug from port C on the sample syringe valve (see [Figure 3-24](#)). Make sure the white PTFE (polytetrafluoroethylene) washer remains installed inside the port.



**Figure 3-24.** AS Syringe Connections

3. Route the sampling needle assembly line, which extends from the AS rear panel, to the sample syringe valve. Remove the acorn nut from the fitting on the line and connect the line to port C on the sample syringe.

4. Fill the flush reservoir (P/N 057408) with flush fluid (normally deionized water) and place it in the organizer. Connect the line that extends from the flush reservoir cap to the line connected to port E.
5. Connect the cable from the sample syringe to the **SAMPLE SYRINGE** connector on the AS rear panel.
6. If the sample preparation option is installed:
  - Connect the cable from the prep syringe to the **PREP SYRINGE** connector on the AS rear panel.
  - Fill one or more reagent reservoirs as required for your application, and connect them to the sample syringe ports (A through D).
7. If you are connecting the AS to a capillary IC system, continue on to the instructions below. If you are installing the AS in an analytical IC system, go on to [page 53](#).

### Capillary IC 3.6.2 Connecting the AS in a Capillary IC System

#### Connecting the AS to a Single Injection Valve in the Dionex IC Cube

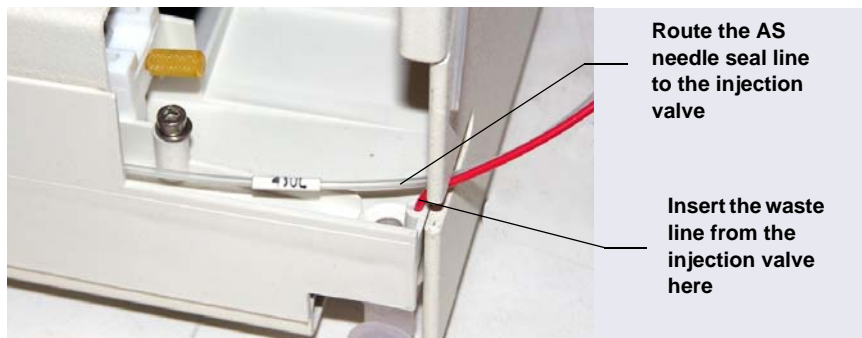
1. Locate the coiled needle seal line inside the AS door. This line is connected to the AS inject port.

**IMPORTANT**

The needle seal line from the AS inject port is specially constructed. It consists of two tubes (one inside the other) that are sealed at the end. This seal must be maintained.

In addition, the line is calibrated for use with the Dionex ICS-5000 system. To ensure correct autosampler function, this line **MUST NOT BE CUT!** If replacement is required, refer to the AS operator's manual for the required part number and replacement instructions.

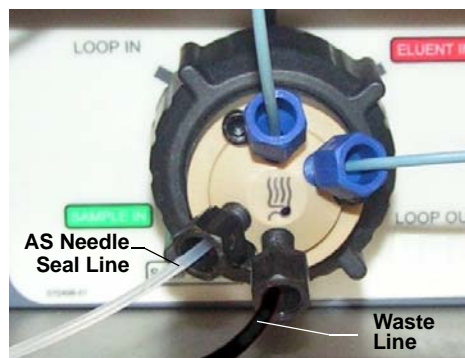
2. Route the needle seal line through the side slot on the AS (see [Figure 3-25](#)) and then through the upper side slot on the DC to the injection valve in the Dionex IC Cube.



**Figure 3-25.** AS Drip Tray

3. Connect the needle seal line to the **Sample In** port (5) on the injection valve (see [Figure 3-30](#)).

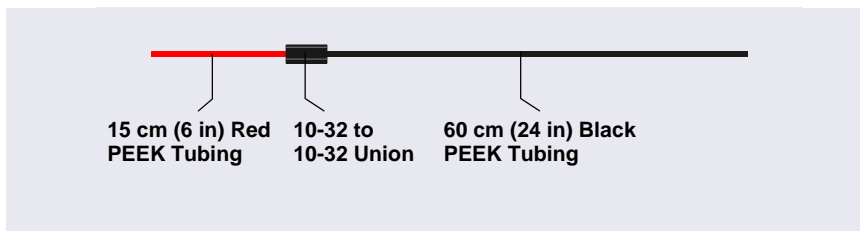
Make sure the needle seal line is not pinched at any point.



**Figure 3-26.** Dionex IC Cube Injection Valve

4. Follow the steps below to create an injection valve waste line:
  - a. Locate the following items in the DC Ship Kit (P/N 072011):
    - 0.25 mm (0.010 in) ID black PEEK tubing
    - 0.125 mm (0.005 in) ID red PEEK tubing
    - 10-32 to 10-32 union (P/N 042627), four 10-32 fitting bolts (P/N 043275) and four 10-32 double-cone ferrules (P/N 043276)

- b. Cut a 60 cm (24 in) piece of black PEEK tubing and a 15 cm (6 in) piece of red PEEK tubing. Use the union to connect these two pieces of tubing. This is the waste line (see [Figure 3-27](#)).



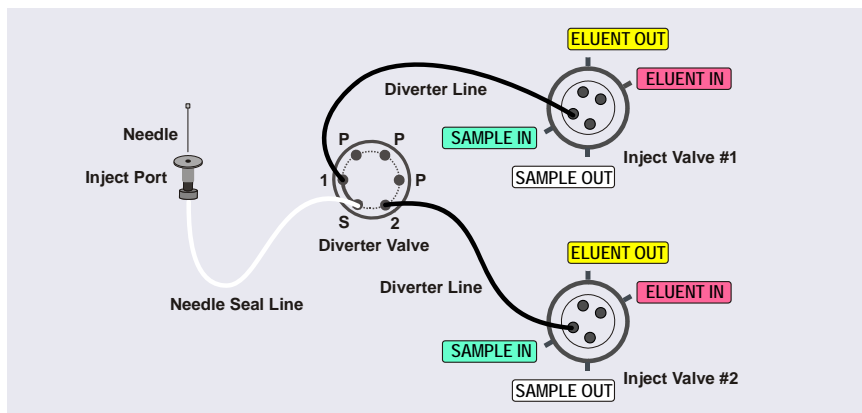
**Figure 3-27.** AS Waste Line for Capillary IC

- c. Connect the black tubing end of the waste line to the **Sample Out** port (6) on the injection valve.
- d. Route the line through the side slots on the DC and AS to the AS drip tray.
- e. To ensure that the waste line stays in place in the opening in the AS drip tray, sharply bend the end of the red PEEK tubing about 13 mm (1/2 in) from the end, being careful not to restrict the inner diameter.
- f. Push the bent end of the red PEEK tubing into the small round opening in the AS drip tray (see [Figure 3-25](#)).



Capillary  
IC**Connecting the AS to Two Injection Valves in the Dionex IC Cube (for Sequential Injections)**

1. Connect the AS needle seal line to port **S** on the AS diverter valve (see [Figure 3-28](#)).



**Figure 3-28.** Sequential Injection Connections for a Capillary IC System

2. Locate the coil of 0.25 mm (0.010 in) ID black PEEK tubing in the DC Ship Kit (P/N 072011). Cut two 50 cm (20 in) lengths of this tubing.
3. Connect one of the PEEK lines to port 1 on the diverter valve; connect the other line to port 2.
4. Connect the open ends of these lines to the **Sample In** ports (5) on the injection valves of system #1 and system #2.
5. Follow the instructions in [Step 4](#) of the previous section to create a waste line for each injection valve.
6. After creating the waste lines and connecting them to the injection valves, route each waste line to the AS drip tray. Insert the waste line for the first injection valve into the small round opening in the AS drip tray. Insert the waste line for the second injection valve about 12 mm (1/2 in) into the large drain opening in the AS drip tray.
7. Calibrate the inject port volume (the volume of the needle seal and diverter valve line) for each system. Refer to the AS operator's manual for instructions.

Capillary IC

### Selecting AS Operating Parameters for Capillary IC Systems

After connecting the AS to the injection valve, select the operating parameters appropriate for your capillary IC system.

1. On the AS front panel, go to the **SYSTEM PARAMETERS** screen and select the **Sample Mode**:
  - If the AS is connected to a single injection valve, select **Normal**.
  - If the AS is equipped with a diverter valve and is connected to two injection valves, select **Sequential**.
2. To set other operating parameters, refer to [Table 3-4](#). Settings depend on the volume of sample available for the AS to load to the injection valve.

Sample Volume Available	Loop Size	Syringe Speed	Injection Volume (for full-loop injections)
Larger	10 µL	3	>10 µL
Smaller	2 µL	3	>2 µL

**Table 3-4.** AS Operating Parameters per Sample Volume Size

- Select the **Loop Size** on the AS front panel **PLUMBING CONFIGURATION** screen.
  - Select the **Syringe Speed** on the Chromeleon 7 ePanel Set or in the instrument method. For Chromeleon 6.8, select the speed on the panel tabset or in the program.
  - Select the **Injection Volume** in the Chromeleon sequence.
3. Go on to [Section 3.8](#).

### 3.6.3 Connecting the AS in an Analytical IC System

1. Open the DC (or TC) and AS doors.
2. Locate the coiled needle seal line inside the AS door. This line is connected to the AS inject port.

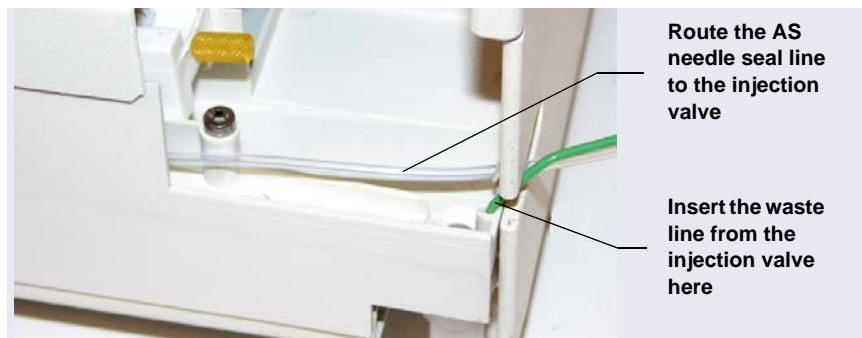
**IMPORTANT**

The needle seal line from the AS inject port is specially constructed. It consists of two tubes (one inside the other) that are sealed at the end. This seal must be maintained.

In addition, the line is calibrated for use with the Dionex ICS-5000 system. To ensure correct autosampler function, this line **MUST NOT BE CUT!** If replacement is required, refer to the AS operator's manual for the required part number and replacement instructions.

3. To connect the AS to a single injection valve in a DC or TC:
  - a. Route the needle seal line through the side slot on the AS (see [Figure 3-29](#)) and then through the side slot on the DC (or TC) to the injection valve.

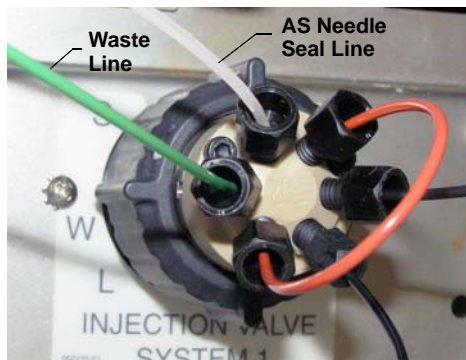
If you are connecting the AS to a TC, be sure to push the needle seal line all the way to the back of the side slot on the TC.



**Figure 3-29.** AS Drip Tray

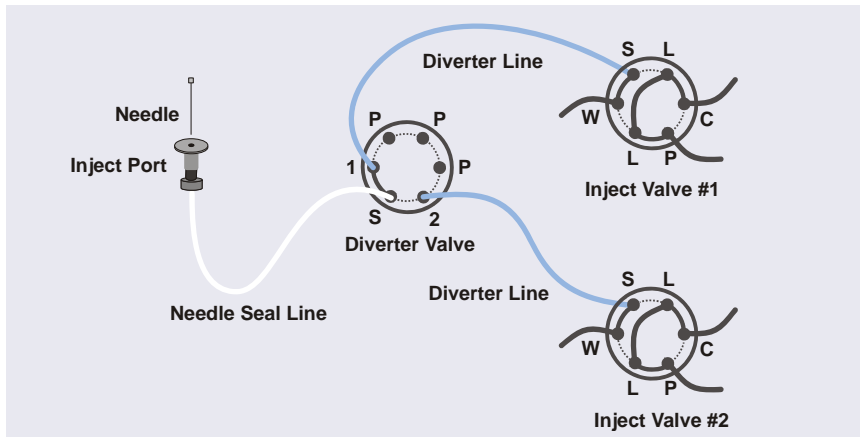
- b. Connect the needle seal line to port **S** on the injection valve (see [Figure 3-30](#)).

Make sure the needle seal line is not pinched at any point.



**Figure 3-30.** DC Injection Valve for an Analytical IC System

- 4. To connect the AS to two injection valves in the DC (for **sequential** injections):
  - a. Connect the needle seal line to port **S** on the AS diverter valve (see [Figure 3-31](#)).



**Figure 3-31.** Sequential Injection Connections for an Analytical IC System

- b. Connect the sample out line from port 1 on the diverter valve to port **S** on the injection valve of system #1.
- c. Connect the sample out line from port 2 on the diverter valve to port **S** on the injection valve of system #2.

5. To connect the AS to two injection valves in the DC (for **simultaneous** injections):
  - a. Connect the needle seal line to the Y-connector inside the AS.
  - b. Connect one of the lines from the Y-connector to port **S (5)** on the injection valve of system #1.
  - c. Connect the other line from the Y-connector to port **S (5)** on the injection valve of system #2.
6. Connect the injection valve waste line:
  - a. In an analytical IC system, a green waste line is connected to port **W** on the injection valve. Route the waste line through the side slot on the DC (or TC) and the side slot on the AS to the AS drip tray.
  - b. Trim the waste line to an appropriate length to allow it to fit into the small round opening on the right side of the AS drip tray.
  - c. To ensure that the waste line stays in place in the opening in the AS drip tray, sharply bend the line about 13 mm (1/2 in) from the end, being careful not to restrict the inner diameter. Push the bent end of the line into the opening in the AS drip tray (see [Figure 3-30](#)).
  - d. If you are connecting to a second injection valve, insert the waste line from the other valve about 12 mm (1/2 in) into the large drain opening in the AS drip tray.
7. If you connected the AS to two injection valves for sequential injections, calibrate the inject port volume (the volume of the needle seal and diverter valve line) for each system. Refer to the AS operator's manual for instructions.

**Analytical  
IC****Selecting AS Operating Parameters for Analytical IC Systems**

After connecting the AS to the injection valve, select the operating parameters (**Sample Mode**, **Loop Size**, **Syringe Speed**, and so on) that are appropriate for your analytical IC system and application. Refer to the AS operator's manual for instructions.

Go on to [Section 3.8](#).

### 3.7 Connecting a Dionex AS-DV Autosampler (Optional)

This section provides brief installation instructions for the AS-DV Autosampler. For details, refer to the *AS-DV Autosampler Operator's Manual* (Document No. 065259), provided on the Thermo Scientific Reference Library DVD (P/N 053891).

1. Place the AS-DV to the left of the DC (or TC) on the workbench or on top of the DC.
2. Remove the AS-DV front cover by gripping the indentations at each side and pulling the cover straight off toward you.
3. Route the sample out line from the aperture on the front of the AS-DV through the side slot in the AS-DV chassis. Leave a little slack in the tubing.
4. Route the line from the AS-DV to the injection valve of the DC (or TC).
5. Connect the outlet line to the **Sample In** port or port **S** of the injection valve.
6. Replace the front panel and close the top cover on the AS-DV.

Go on to [Section 3.8](#).

### 3.8 Connecting Drain Hoses

1. Locate the corrugated drain hose (P/N 055075) in the Ship Kit for each module.
2. Connect the hose to the drain port on each module. Place the open end of each hose into a waste container or appropriate drain.

**IMPORTANT**

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

Go on to [Section 3.9](#).

## 3.9 Setting Up the Computer

Configuration options include:

- Desktop or notebook PC with Chromeleon 7 or Chromeleon 6.8 chromatography software
- Monitor mounted on a Thermo Fisher Scientific Dionex ICS-5000 module (typically, the DC)
- Wired or wireless keyboard and mouse

### 3.9.1 Installing a Desktop or Notebook PC

#### Outside North America

1. Remove the computer and all documentation from the computer box and place them on a workbench.
2. Chromeleon 7 and Chromeleon 6.8 run under the Microsoft® Windows Vista® and Windows XP operating systems. Refer to <http://www.thermoscientific.com/dionex> to verify that the PC meets current system specifications.
3. Follow the instructions in the computer installation guide to hook up the PC components.
4. When you finish, go to [Section 3.9.2](#) to install a monitor arm (optional) and then go to [Section 3.10](#) to set up the chromatography software.

#### North America Only

**NOTE** These instructions assume that Chromeleon and the software license were installed on the PC before shipment from Thermo Fisher Scientific.

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

3. When you finish, go to [Section 3.9.2](#) to install a monitor arm (optional) and then go to [Section 3.11](#) to connect the PC to the Dionex ICS-5000 system.

### **3.9.2 Installing a Monitor Arm (Optional)**

Follow these instructions to install an articulating arm (P/N 064835) for mounting a computer monitor.

1. Remove the components of the articulating arm and all documentation from the shipping box. Follow the assembly instructions provided to assemble the arm and install the monitor.

The monitor arm is usually installed on top of the DC (see [Figure 3-32](#)); however, it may be installed in one of the following locations, instead: the left side of the DC, the right side of the EG, or the left side of the AS.

A side mounting kit (P/N 064834) is required to install the monitor on the side of a module.



**Figure 3-32.** Monitor Mounted on Top of the DC

**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, refer to [Section 2.4](#).

2. 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.



## 3.10 Setting Up the Chromatography Software

### 3.10.1 Installing the Software and License




When you purchase Chromeleon 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).




The Dionex ICS-5000 requires the Chromeleon 7 Chromatography Data System (release 7.0 SR1 or later) or Chromeleon 6.8 Chromatography Data System (release 6.8 SR9a or later).

### 3.10.2 Chromeleon 7: Starting the Instrument Controller Service

To start the Instrument Controller Service, right-click the Chromeleon tray icon  (which is crossed out in red) and click **Start Chromeleon Instrument Controller**. The icon changes to gold  to indicate that the Instrument Controller Service is starting. When the Instrument Controller Service is running (idle), the icon changes to gray .

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

### 3.10.3 Chromeleon 6.8: Starting the Server

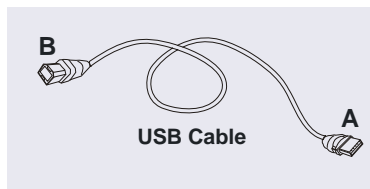
To start the Chromeleon Server, right-click the Chromeleon Server Monitor tray icon  (which is crossed out in red) and click **Start Server**. The icon changes to gold  to indicate that the Chromeleon Server is starting. When the Chromeleon Server is running (idle), the icon changes to gray .

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

## 3.11 Connecting Modules to the Computer

### 3.11.1 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 3-33](#)).



**Figure 3-33.** USB Cable

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

- The DC Ship Kit (P/N 072011) 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.

### 3.11.2 USB Compatibility Issues

All Dionex ICS-5000 modules, and other modules connected to them (for example, an AS), are equipped with USB receptacles. Your Dionex ICS-5000 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 3-5](#)) and observe the rules for connections shown in [Figure 3-34](#).

Type of Hub	Dionex Module	Notes
USB 2.0 internal hub (powered)	Dionex ICS-5000 DC Dionex ICS-5000 EG	When you turn off the power using the <b>POWER</b> 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 ICS-5000 DP Dionex ICS-5000 SP	When you turn off the power using the <b>POWER</b> 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	AS Autosampler Dionex ICS-5000 TC ICS-Series PDA ICS-Series VWD	

**Table 3-5.** USB Versions of Dionex Modules

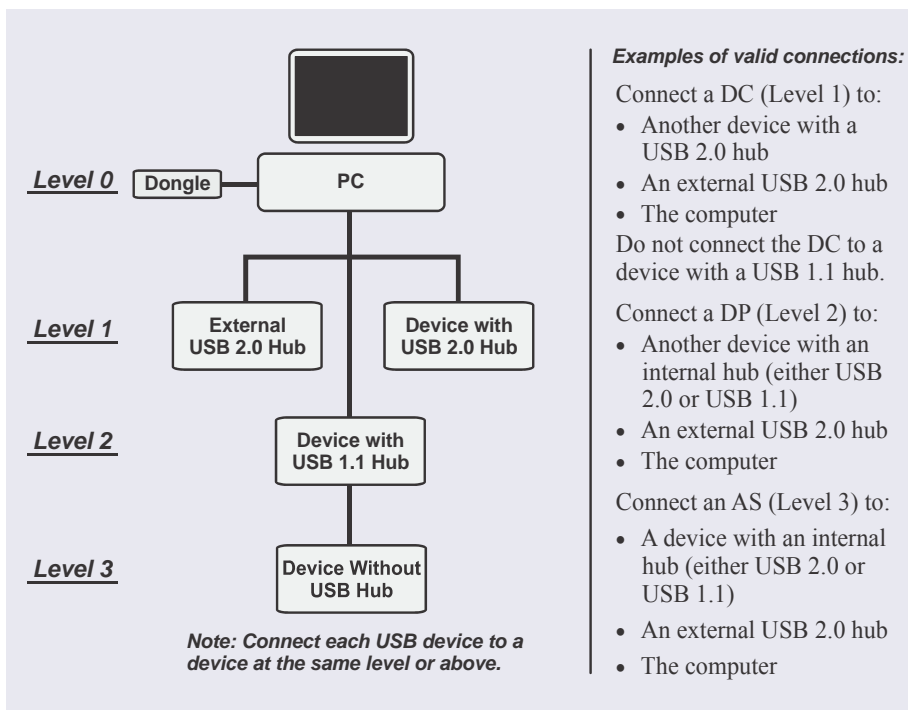


Figure 3-34. Overview of Dionex ICS-5000 System USB Connections

### 3.11.3 USB Connection Examples

**IMPORTANT**

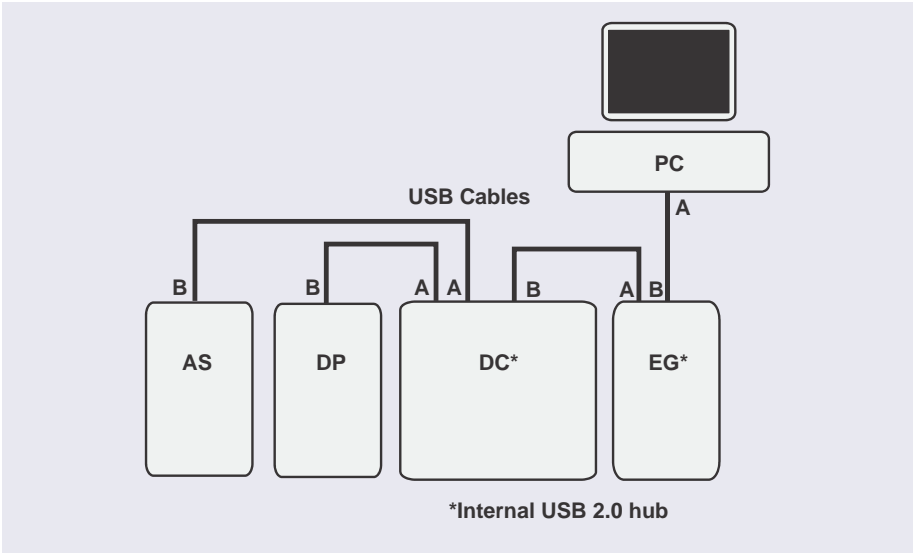
Before connecting the USB cables, verify that Chromeleon 7 or Chromeleon 6.8 was installed on the PC and the license code was entered. If the chromatography software is not installed first, Windows will be unable to identify the modules when the power is turned on. See [Section 3.10](#) for software installation information.

**IMPORTANT**

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

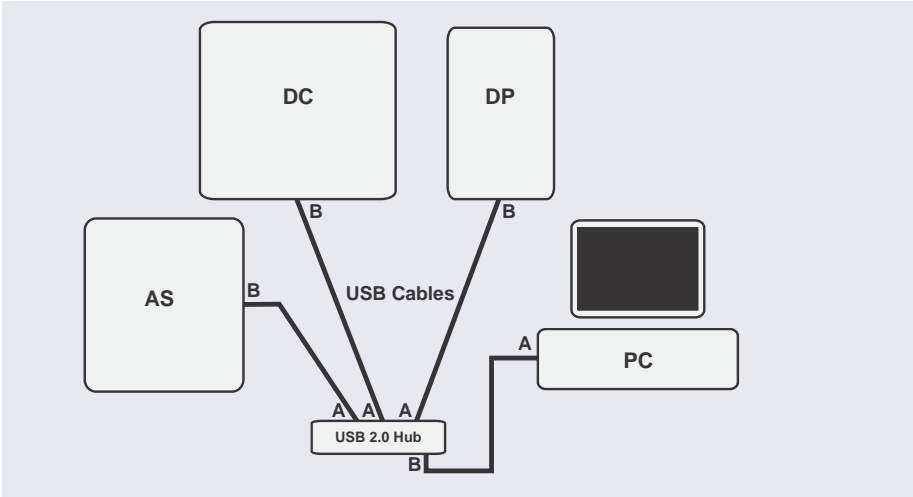
**IMPORTANT**

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



**Figure 3-35.** 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 3-36](#)).



**Figure 3-36.** Example Connections:  
Multiple Modules Connected via an External Hub

## 3.12 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) from the main power receptacle on the rear panel of each module to a grounded power source. The power supply is auto-sensing: No adjustment is needed to select the line voltage.



**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.

4. Go on to [Section 3.13](#).

## 3.13 Installing the USB Device Drivers

1. Turn on the computer power.
2. Log onto Windows Vista or Windows XP as an **administrator**.

For a network computer, log on as a user with local computer administrator privileges.

**IMPORTANT**

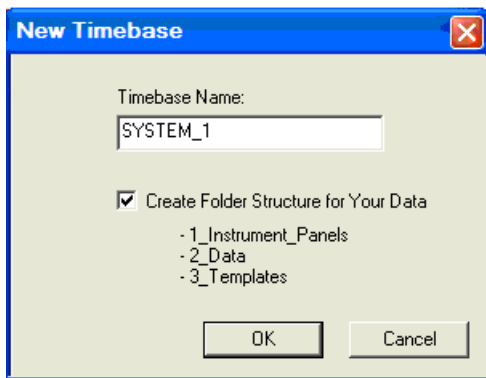
**Before turning on the power to any Dionex ICS-5000 modules, verify that Chromeleon 7 or Chromeleon 6.8 was installed on the PC and the license code was entered. If the chromatography software is not installed first, Windows will be unable to identify the modules.**

3. Verify that all accessory devices that are equipped with electrical connections (EGC, CR-TC, detector, Dionex IC Cube, suppressor, column ID chips, etc.) are plugged into their respective modules.
4. 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.

5. **For Windows Vista:** Windows Vista detects the new modules and performs the USB driver installation.
  - a. When the driver installation is complete, the Chromeleon New Instrument (Chromeleon 7) or New Timebase (Chromeleon 6.8) dialog box appears. For example, [Figure 3-37](#) shows the CM 6.8

dialog box. Accept the default option (**Create a new instrument** or **Create a new timebase**) and click **OK**.



**Figure 3-37.** *Chromeleon 6.8 New Timebase Dialog Box*

- b. This opens the Auto Configuration dialog box (see [Figure 3-38](#)). Leave the dialog box open, but disregard it for now.
  - c. Wait for Windows to complete the driver installation for all modules and then go on to [Section 3.14](#).
6. **For Windows XP:** Windows XP detects the new modules and launches the Found New Hardware Wizard. Use the wizard to install each module in the system, one at a time, as described below.
  - a. If asked whether Windows can connect to Windows Update to search for software, select **No, not this time**.
  - b. Accept the default option (**Install the software automatically**) and click **Next>**.
  - c. When the hardware wizard reports that the software for the first module has been installed, click **Finish**.
  - d. The Chromeleon USB Auto Configuration Wizard automatically appears. Accept the default option (**Create a new instrument** or **Create a new timebase**) and click **OK**. This opens the Auto Configuration dialog box (see [Figure 3-38](#)). Leave the dialog box open, but disregard it for now.
  - e. Repeat [Step b](#) and [Step c](#) for the remaining modules. After the driver installation for all modules is complete, go on to [Section 3.14](#).



**NOTE** If Windows fails to detect all modules in the system, refer to the Troubleshooting Tips below.

### Troubleshooting Tips

Problem	Action
Windows Vista fails to detect the module and launches a wizard instead	<p>This indicates that you connected the module to the computer and turned on the power for the first time before you installed Chromeleon. To resolve the problem:</p> <ul style="list-style-type: none"> <li>• Click <b>Cancel</b> to exit the wizard.</li> <li>• Turn off the module and unplug the USB cable from the computer.</li> <li>• Install Chromeleon.</li> <li>• Reconnect the USB cable to the computer and turn on the power to the module.</li> </ul> <p>Windows Vista will now detect the module and automatically install the USB software for the module.</p>
Windows XP fails to detect the module and a message box asks for a USB configuration file (CmWdmUsb.inf)	<p>This indicates that you connected the module to the computer and turned on the power for the first time before you installed Chromeleon. To resolve the problem:</p> <ul style="list-style-type: none"> <li>• Click <b>Cancel</b> in the Windows message box.</li> <li>• Turn off the module power and unplug the USB cable from the computer.</li> <li>• Install Chromeleon.</li> <li>• Reconnect the USB cable to the computer and turn on the power to the module.</li> </ul> <p>Windows will now detect the module and launch the Found New Hardware Wizard.</p>

## 3.14 Configuring the Modules in Chromeleon

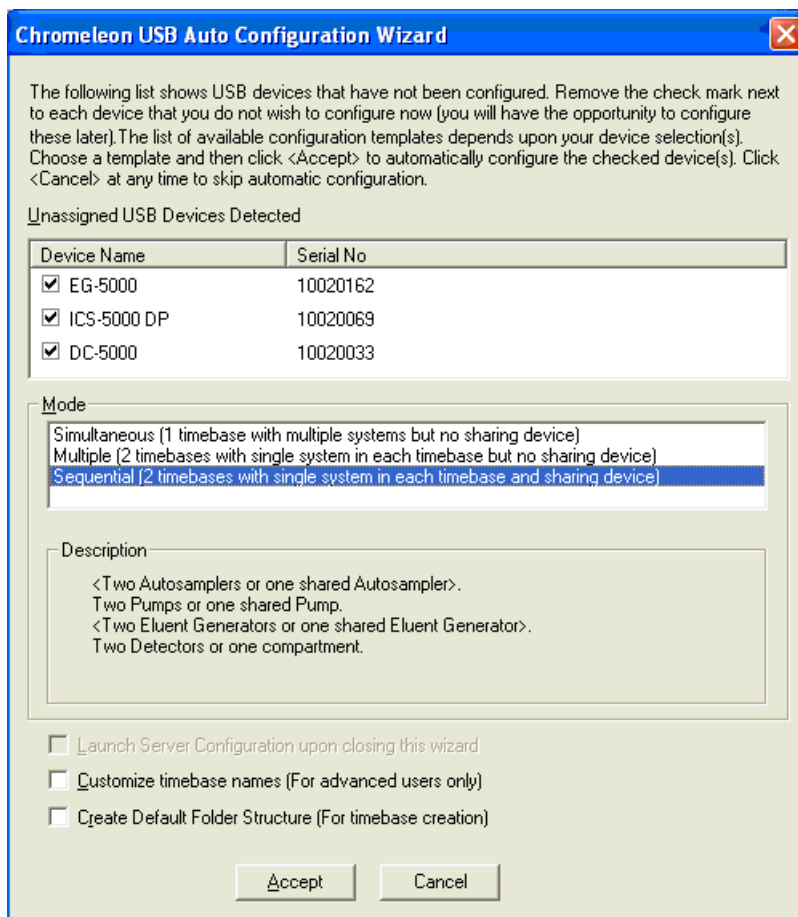
The Chromeleon USB Auto Configuration Wizard appears automatically when a USB device that is not assigned to a Chromeleon 7 instrument or Chromeleon 6.8 timebase is powered up. You can use the wizard to create a new instrument or timebase for your Dionex ICS-5000 modules (see [Section 3.14.1](#)).

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 the *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).

### 3.14.1 Using the USB Auto Configuration Wizard



**Figure 3-38.** USB Auto Configuration Wizard  
(Chromeleon 6.8 Version Shown)

1. Review the names displayed under **Unassigned USB Devices Detected**. Clear the check mark before the name of any device that you do not want to configure at this time.
2. Under **Mode**, select a predefined configuration template for the new instrument or timebase.
3. (Optional) Select the **Launch Instrument Controller Service upon closing this wizard** check box (Chromeleon 7) or the **Launch Server**

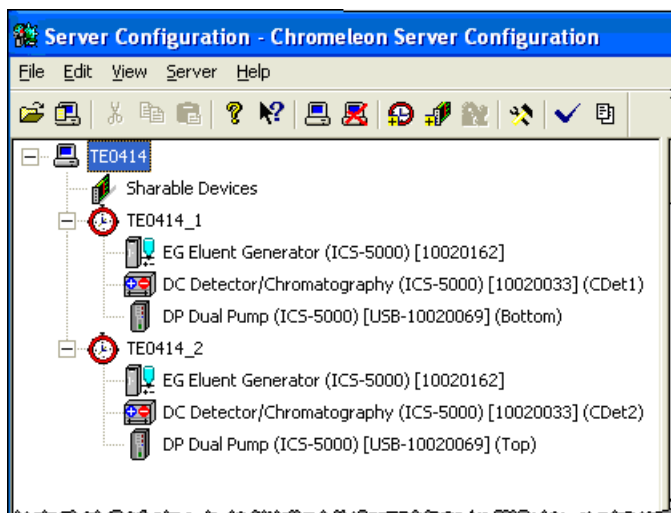
**Configuration upon closing this wizard** check box (Chromeleon 6.8). The check box is disabled if the program is already running.

4. (Optional) Select the **Customize Instrument names (For advanced users only)** check box (Chromeleon 7) or the **Customize timebase names (For advanced users only)** check box (Chromeleon 6.8).
5. Click **Accept** to create a new instrument or timebase.
6. If you selected the **Customize Instrument...** or **Customize timebase...** option, the Change Instrument Names or Change Timebase Names dialog box appears now.

Enter a *new and unique* name and click the **Use Custom Names** button. (To cancel, click the **Use Default Names** button.)

**NOTE** Selecting a timebase name already in use on another server can cause unpredictable behavior.

7. If you selected the **Launch Instrument Controller Service...** or **Launch Server Configuration...** option, the program automatically starts running when you close the wizard. The Instrument Controller Service or Server Configuration is updated with the new configuration information (see [Figure 3-39](#)).



**Figure 3-39.** Example Chromeleon 6.8 Timebase

### 3.14.2 Selecting Configuration Properties

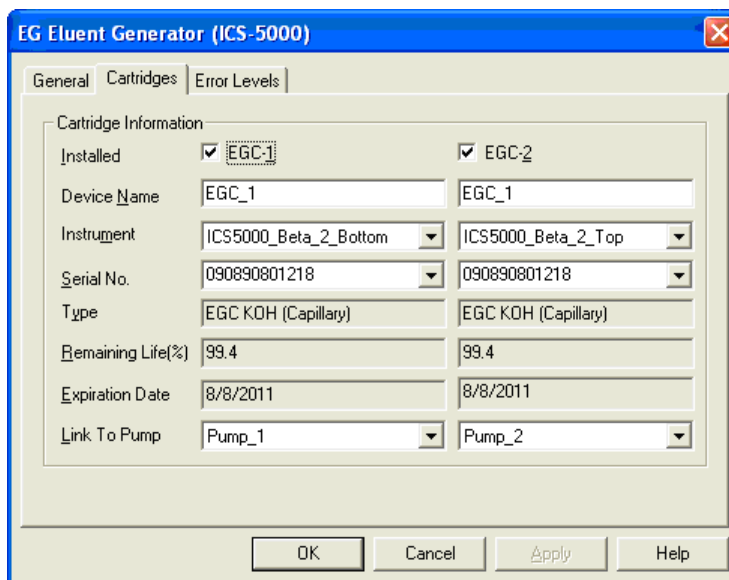
When a module is added to an instrument or timebase, default configuration properties are selected. For each module, verify the default settings and select other settings as required.

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 page, depend on the type of device. For details about a page, click **Help**.

#### EG Configuration Properties

On the **Cartridges** tab page (see [Figure 3-40](#)), select the following settings for each 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.

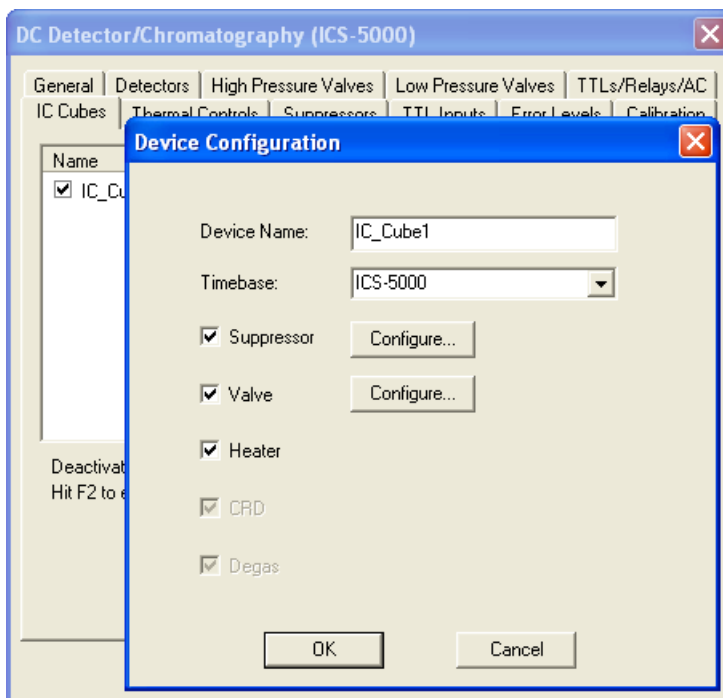


**Figure 3-40.** EG Configuration Example: Cartridges Tab Page

Capillary  
IC

## DC Configuration Properties

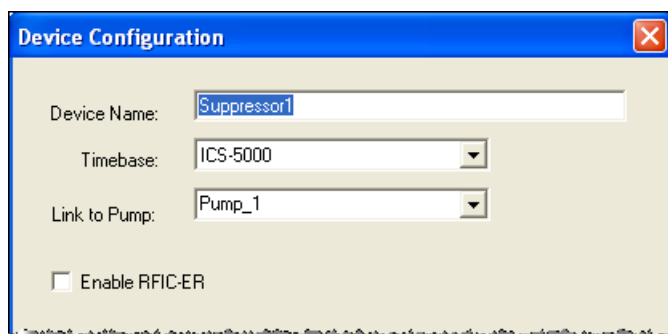
On the **IC Cubes** tab page, double-click the Dionex IC Cube name. The Device Configuration dialog box appears (see [Figure 3-41](#)).



**Figure 3-41.** Dionex IC Cube Configuration Example

- Verify that the Dionex 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

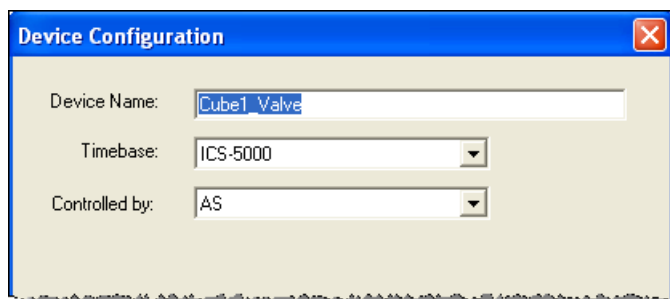
instrument (or timebase) and that it is linked to the pump (see [Figure 3-42](#)).



**Figure 3-42.** Dionex IC Cube Suppressor Configuration Example

- Click **Configure** next to **Valve** and verify that the Dionex IC Cube injection valve is assigned to the correct instrument (or timebase) (see [Figure 3-43](#)).

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

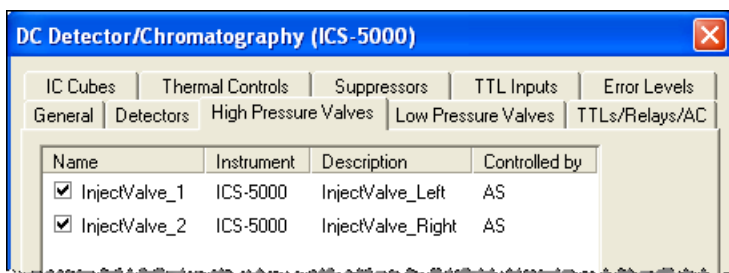


**Figure 3-43.** Dionex IC Cube Valve Configuration Example

Analytical IC

### DC Configuration Properties

On the **High Pressure Valves** tab page (see [Figure 3-44](#)), 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 AS Autosampler and the AS-DV Autosampler.



**Figure 3-44.** DC High Pressure Valves Configuration Example

If an autosampler is not installed, select **DC** under **Controlled by**.

To change the setting, select the injection valve name and press **F2**.

Analytical IC

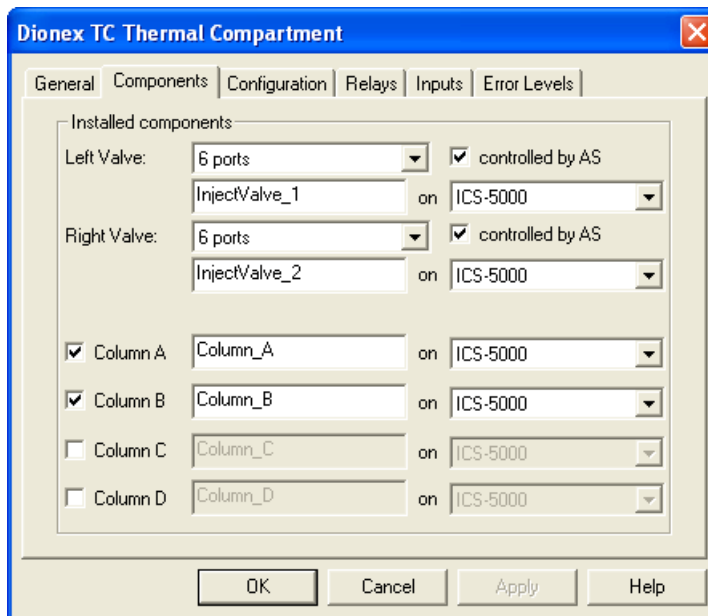
### TC Configuration Properties

On the **Components** tab page (see [Figure 3-45](#)):

- If the TC valve is connected to a Dionex AS Autosampler or Dionex AS-DV Autosampler, 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 3.5.2](#)), 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 3-45.** TC Configuration Example: Components Tab Page

After configuring all modules in Chromeleon, start the Chromeleon client.

### 3.15 Starting the Chromeleon Client

1. Start the Chromeleon 7 or Chromeleon 6.8 client:
  - To start Chromeleon 7, click **Start > All Programs > 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. Click the **Pump** tab.

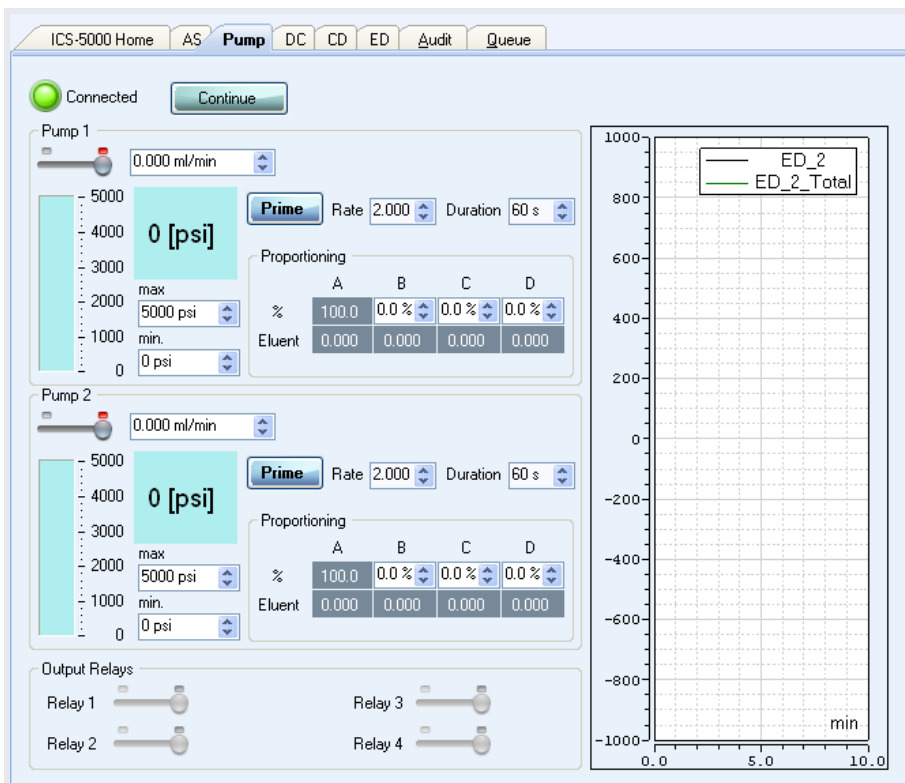

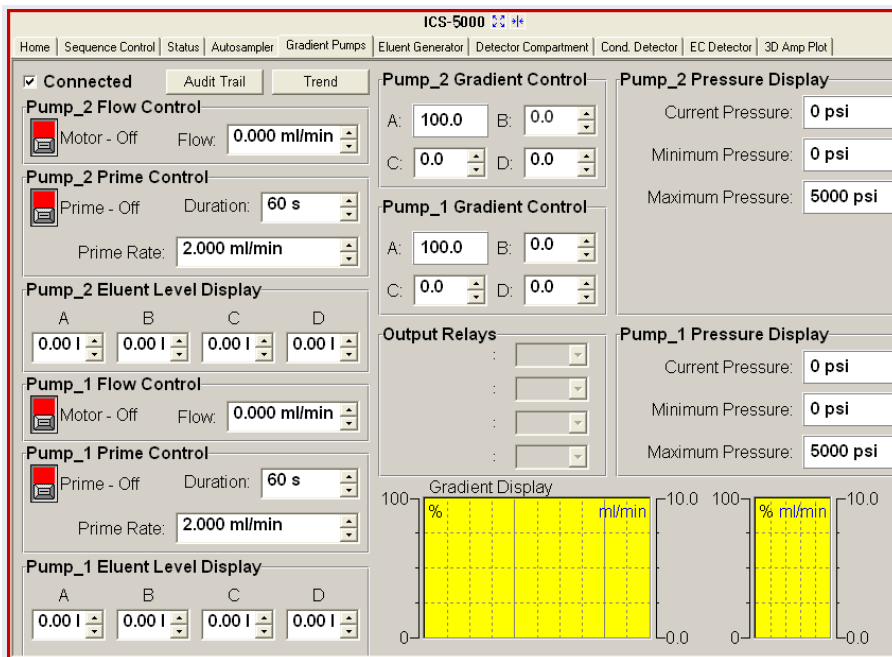


Figure 3-46. Example Chromeleon 7 ePanel Set

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



**Figure 3-47.** Example Chromeleon 6.8 Panel Tabset

Go on to [Section 3.16](#).

## 3.16 Completing the Pump Installation

### 3.16.1 Setting Up the Piston Seal Wash System

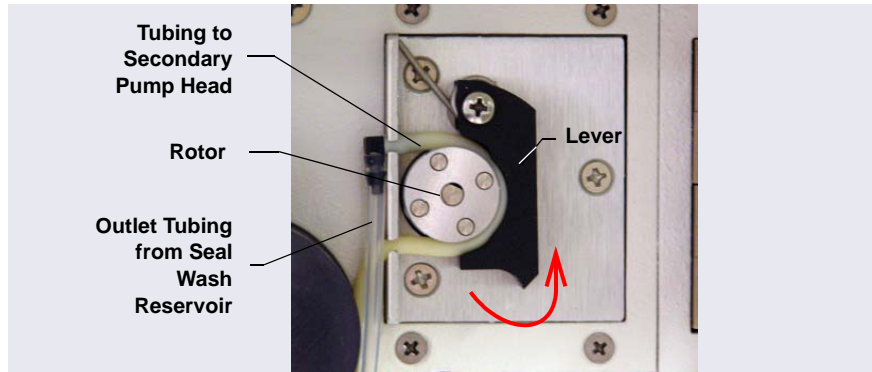
#### Notes for DP Modules

- 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 Thermo Fisher Scientific, the seal wash system is connected to the bottom pump (pump 1). Follow the instructions on [page 79](#) if you want to connect the seal wash system to the top pump (pump 2).
- Thermo Fisher Scientific offers an External Seal Wash Kit (P/N 063518) for users who need to operate a piston seal wash system for both pumps in the DP. Installation instructions are provided in the kit.

#### Setting Up the Seal Wash System (All pumps)

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 3-48](#)). 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 3-48.** Peristaltic (Piston Seal Wash) Pump

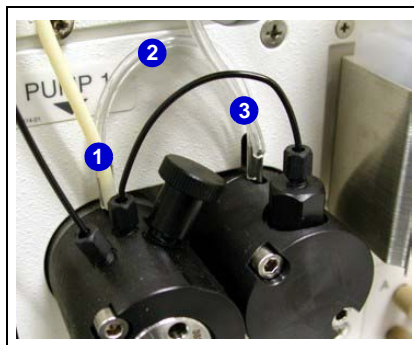
#### **(Optional) Replumbing the Seal Wash System (DP only)**

Follow the instructions in this section if you want to connect the seal wash system to the top pump (pump 2) in a DP. When you finish these connections, follow the instructions starting on [page 78](#) to set up the piston seal wash system.

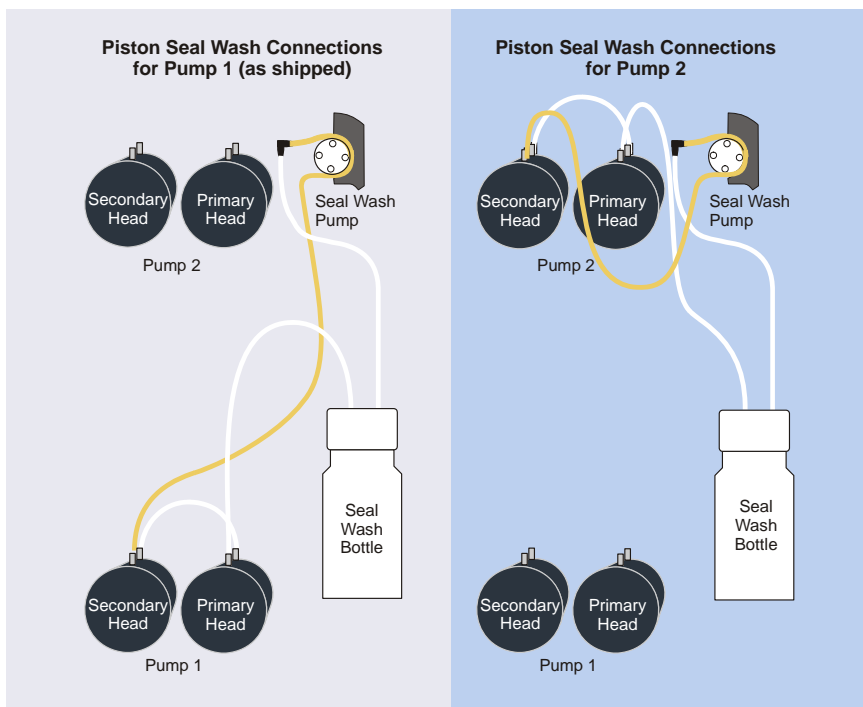
To connect the seal wash system to pump 2, disconnect three piston seal wash lines from pump 1 (see [Figure 3-49](#)) and reconnect the lines to their respective locations on pump 2 (see [Figure 3-50](#)).

Move these lines from pump 1 to pump 2:

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



**Figure 3-49.** Piston Seal Wash Connections to Pump 2



**Figure 3-50.** DP Piston Seal Wash Connections (Pump 1 or Pump 2)

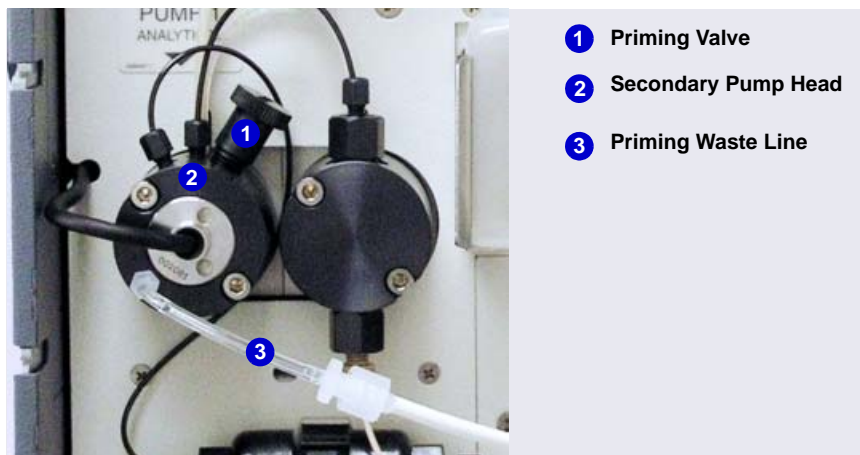
### Activating the Piston Seal Wash Function

1. Open the Chromeleon 7 ePanel Set or the Chromeleon 6.8 panel tabset.
2. Press the **F8** key to open the Command window or Commands dialog box.
3. Select the pump name.
4. For Chromeleon 7, click the **Properties** tab in the right pane of the dialog box. 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.

### 3.16.2 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. Open the priming valve on the secondary pump head (see [Figure 3-51](#)) 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 3-51.** DP/SP Priming Valve

3. On the Chromeleon 7 ePanel Set or the Chromeleon 6.8 panel tabset, click the **Pump** tab.
4. **Gradient pump only:** Enter 100% for the channel (A, B, C, or D) to be primed.
5. Set the priming flow rate to the desired rate. The default rate for a capillary IC pump is 3.0 mL/min. The default rate for an analytical IC pump is 6.0 mL/min.
6. Click the **Prime** button on the **Pump** panel. 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.
7. 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. You can set a preferred duration.



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

**IMPORTANT**

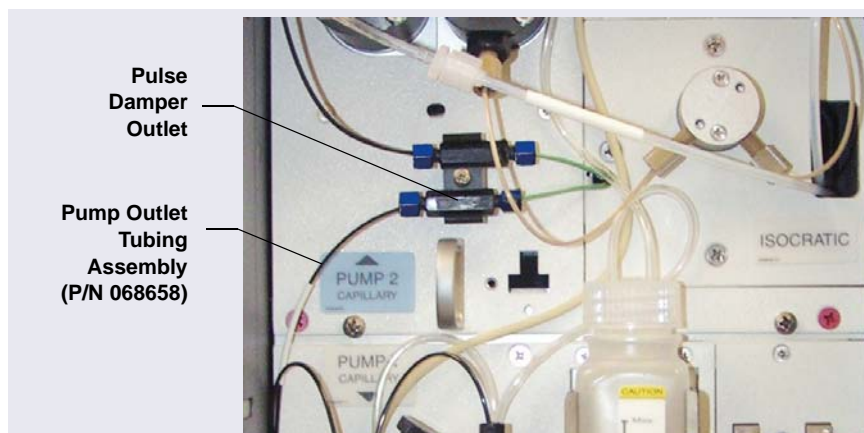
Do not use any tools to tighten the priming valve! Overtightening may destroy the cap seal. Open or close the priming valve only when the system pressure is down.

### 3.16.3 Plumbing the Pump Outlet

Capillary  
IC

#### Plumbing a Capillary Pump

1. Locate the 0.25 mm (0.010 in) ID black PEEK tubing assembly labeled **TO PUMP/DAMPER** (P/N 068658) in the pump Ship Kit.
2. Locate a high-pressure (blue) fitting bolt (P/N 074449) and ferrule (P/N 074373) in the EG Ship Kit or Dionex IC Cube Tubing Kit.
3. Connect the tubing to the pulse damper outlet (see [Figure 3-52](#)).



**Figure 3-52.** Capillary Pump Outlet Connection

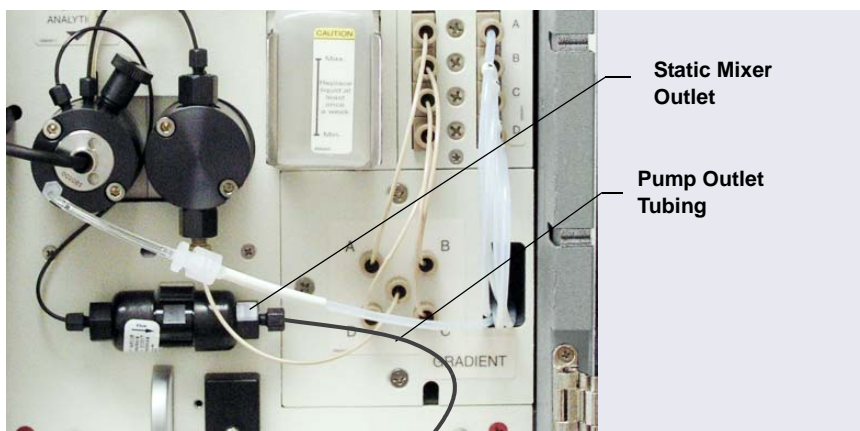
4. Flush the pulse damper:
  - a. Direct the free end of the pump outlet tubing to waste.
  - b. Set the pump **Prime** flow rate to 1.0 mL/min and the **Duration** to 600 s. Click **Prime**. The pulse damper is flushed for 10 minutes.

5. If you are completing the Installation Qualification (IQ), go on to [Section 3.17](#). If not, go on to [Section 3.18](#).

### Analytical IC

#### Plumbing an Analytical Pump

1. Locate the coil of 0.25 mm (0.010 in) ID black PEEK tubing (for standard bore) or the 0.125 mm (0.005 in) ID red PEEK tubing (for microbore). Cut an 86 cm (34 in) piece of this tubing.
2. Connect the tubing to the static mixer outlet (see [Figure 3-53](#)).



**Figure 3-53.** Analytical Pump Outlet Connection

3. If you are completing the Installation Qualification (IQ), go on to [Section 3.17](#). If not, go on to [Section 3.19](#).

### 3.17 Installation Qualification (Optional)

The purpose of running the Installation Qualification (IQ) is to verify that the Dionex ICS-5000 system is correctly installed and that it meets performance specifications. For instructions, refer to *IC System Installation Qualification* (Document No. 031739), provided on the Thermo Scientific Reference Library DVD (P/N 053891).

Allow about 1 hour to complete the IQ. When you finish, continue the Dionex ICS-5000 installation by going to the appropriate system plumbing instructions. For a capillary IC system, go to [Section 3.18](#). For an analytical IC system, go to [Section 3.19](#).

Capillary  
IC

## 3.18 Plumbing a Capillary IC System

**NOTE** To plumb an analytical IC system, go to [Section 3.19](#).

### 3.18.1 Plumbing the EG for Capillary IC Applications



The 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 d'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.



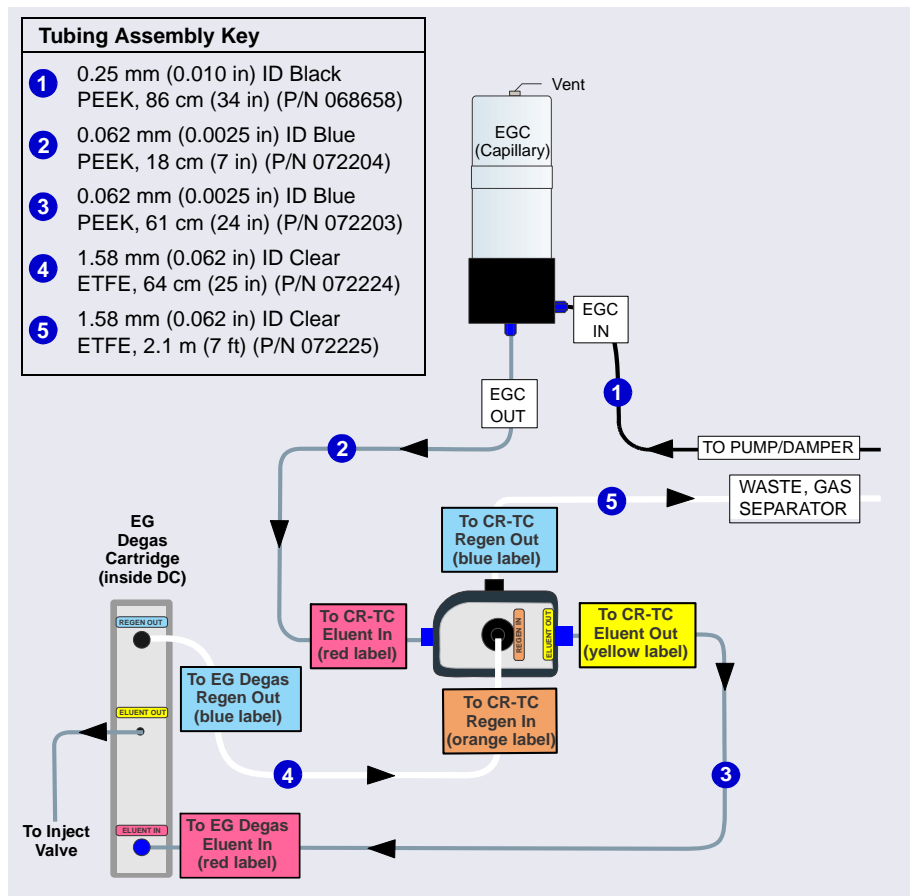
Die EGC-Kartusche enthält eine korrosive Base (KOH, LiOH oder NaOH), eine korrosive Säure (MSA) oder eine konzentrierte  $K_2CO_3$ -Lösung. Tragen Sie daher beim Umgang mit der Kartusche eine Schutzbrille und Handschuhe.

Capillary  
IC

#### Before Beginning

Refer to the 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).

For reference, [Figure 3-54](#) illustrates the liquid flow path through the EG components in a capillary IC system after all plumbing steps are completed.



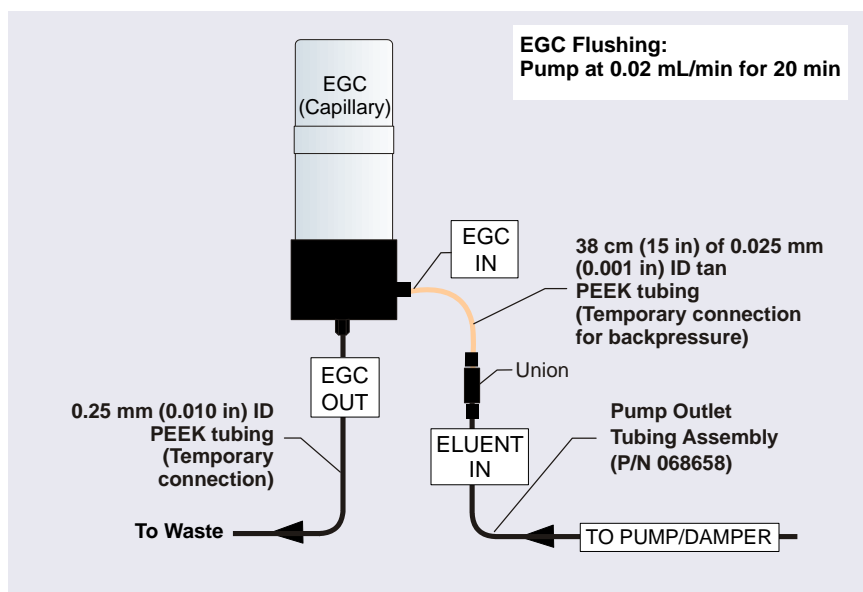
**Figure 3-54.** EG Flow Schematic: Capillary Flow Version

**NOTE** Use blue, high-pressure 10-32 fitting bolts (P/N 074449) and blue, high-pressure 10-32 double cone ferrules (P/N 074343) for high-pressure connections. These instructions indicate when to use the high-pressure fittings. For all other connections, use 10-32 fitting bolts (black) (P/N 043275) and 10-32 double-cone ferrules (tan) (P/N 043276). Fitting bolts and ferrules are included in the EG Ship Kit (P/N 072047).

Capillary  
IC

## Flushing the EGC

1. Locate the 38 cm (15 in) piece of 0.025 mm (0.001 in) ID tan PEEK tubing (P/N 074582) in the EG Ship Kit (P/N 072047).
2. Connect this line to the EGC **INLET** port and connect the other end to the **EGC IN** line from the pump pulse damper (see [Figure 3-55](#)). This is a temporary connection, to provide backpressure during the EGC setup procedure.
3. Connect a piece of 0.25 mm (0.010 in) ID black PEEK tubing to the EGC outlet. Direct the other end of the tubing to waste. This is a temporary connection.
4. Set the pump flow rate to 0.02 mL/min and turn on the pump flow.
5. Flush the capillary EGC for 20 minutes and then turn off the pump flow.



**Figure 3-55.** Flow Schematic for Flushing the Capillary EGC

Capillary IC

Flushing the CR-TC

1. Locate the following items in the EG Ship Kit (P/N 072047):
  - 18 cm (7 in) of 0.062 mm (0.0025 in) ID blue PEEK tubing, labeled **EGC OUT/CR-TC IN** (P/N 072204)
  - Two high-pressure (blue) fitting bolts and two high-pressure (blue) ferrules
  - 2.1 m (7 ft) of 1.58 mm (0.062 in) ID clear ETFE tubing labeled **To CR-TC REGEN OUT** (P/N 072225)
2. Connect these two pieces of tubing to the CR-TC as shown in [Figure 3-56](#). Use the high-pressure (blue) fittings for the **EGC OUT/CR-TC IN** tubing connections.

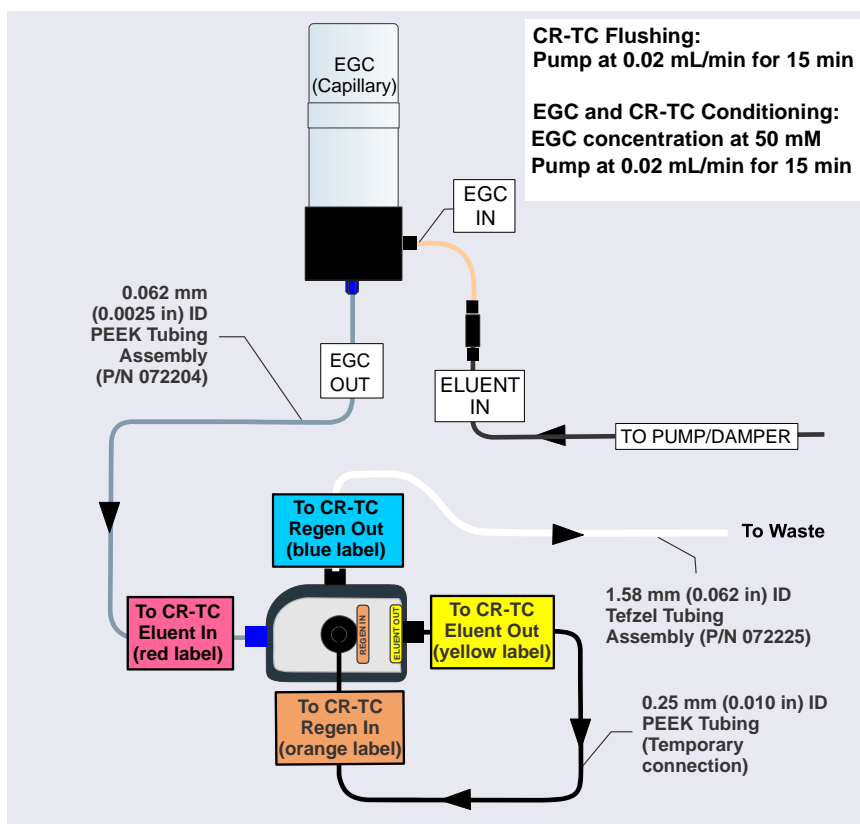


Figure 3-56. Flow Schematic for Flushing the Capillary CR-TC and Conditioning the Capillary EGC and CR-TC

3. Connect a piece of 0.25 mm (0.010 in) ID black PEEK tubing between the **ELUENT OUT** port and the **REGEN IN** port of the capillary CR-TC. This is a temporary connection.
4. Set the pump flow rate to 0.02 mL/min and turn on the pump flow.
5. Flush the capillary CR-TC for 15 minutes.

Capillary  
IC

### Conditioning the EGC and CR-TC

1. Unscrew the fitting on the top of the EGC a few turns to allow venting of the EG.

**IMPORTANT**

**To ensure proper ventilation, always loosen the fitting on the top of the EGC before operation. If you need to remove the EGC from the EG, tighten the fitting to prevent leaks.**

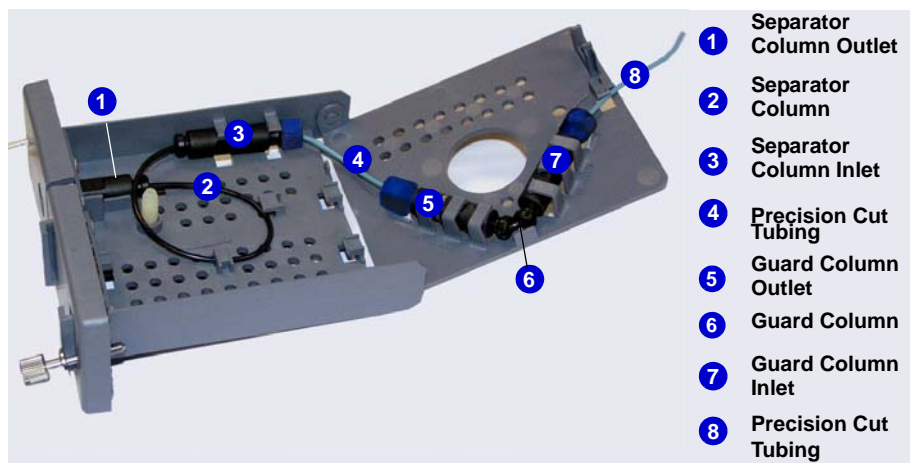
2. Verify that the pump flow rate is set to 0.02 mL/min.
3. Set the EGC concentration to 50 mM and turn on the EGC and CR-TC power.
4. Condition the EGC and CR-TC for 15 minutes.
5. Turn off the EGC and CR-TC power.
6. Turn off the pump flow.

Capillary IC **3.18.2 Plumbing the DC for Capillary IC Applications**

**Installing the Columns and Column Cartridge**

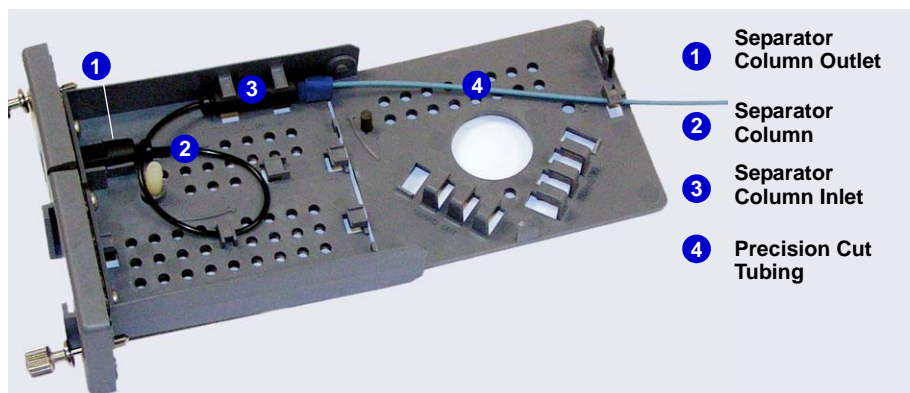
Before installing the new separator column, tear off the column label and slide it into the holder on the front of the cartridge (see [Figure 3-63](#)).

For reference, [Figure 3-57](#) shows the column cartridge after installation of both a capillary guard column and a capillary separator column.



**Figure 3-57.** Separator and Guard Columns Installed in Column Cartridge

[Figure 3-58](#) shows the column cartridge after installation of only a capillary separator column.



**Figure 3-58.** Separator Column Only Installed in Column Cartridge

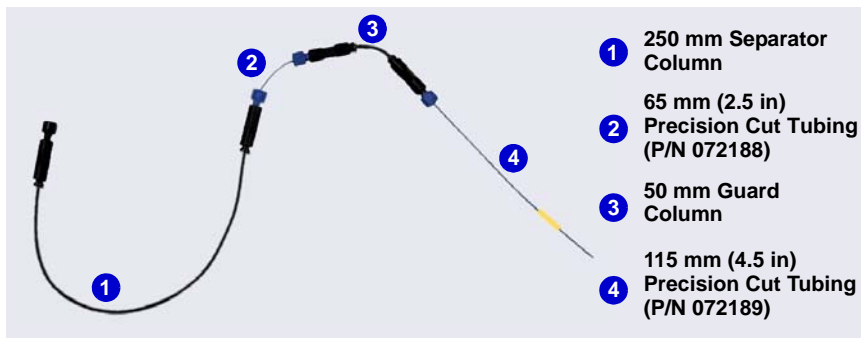


1. Locate the Dionex IC Cube Tubing Kit (P/N 072186) that is shipped with the Dionex IC Cube. The tubing kit includes the following items:

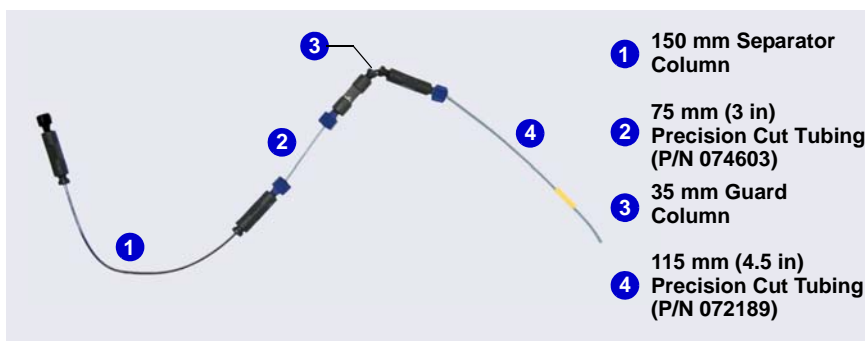
Part	Length/ Quantity	Part Number	Used to Connect...
Precision cut 0.062 mm (0.0025 in) ID PEEK tubing, blue	65 mm (2.56 in)	072188	50 mm guard column outlet to 250 mm separator column inlet
Precision cut 0.062 mm (0.0025 in) ID PEEK tubing, blue, labeled <b>VALVE PORT 3</b>	115 mm (4.53 in)	072189	Guard column inlet to injection valve
Precision cut 0.062 mm (0.0025 in) ID PEEK tubing, blue	75 mm (2.93 in)	074603	35 mm guard column outlet to 150 mm separator column inlet
Precision cut 0.062 mm (0.0025 in) ID PEEK tubing, blue, labeled <b>VALVE PORT 3</b>	210 mm (8.27 in)	072187	Separator column inlet to injection valve (if a guard column is not present)
0.25 mm (0.010 in) ID PEEK tubing, black	610 mm (24 in)	042690	EG degas cartridge <b>REGEN OUT</b> to waste (if an EG is not present)
0.125 mm (0.005 in) ID PEEK tubing, red	610 mm (24 in)	044221	Inject valve waste to AS waste
High-pressure 10-32 fitting bolt, blue	7	074449	<ul style="list-style-type: none"> <li>• EG degas cartridge <b>ELUENT OUT</b> to injection valve</li> <li>• Injection valve to guard or separator column</li> <li>• Guard column to separator column</li> <li>• Separator column to suppressor</li> </ul>
High-pressure 10-32 ferrule, double-cone, blue	7	074373	Use with high-pressure fitting bolts

**Table 3-6.** Contents of the Dionex IC Cube Tubing Kit (P/N 072186)

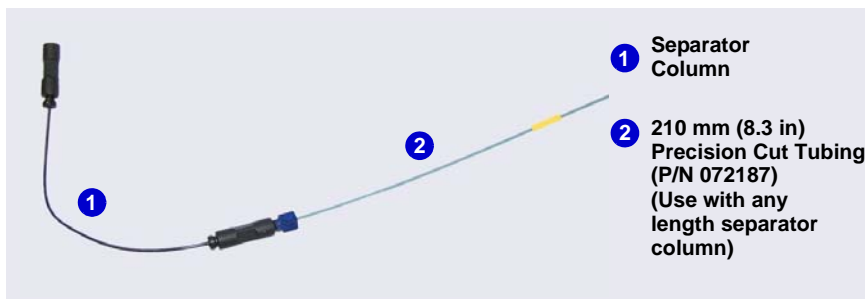
2. Refer to the following figures for the precision cut tubing required for your configuration. Use high-pressure (blue) fittings for the connections:



**Figure 3-59.** Tubing Connections for 250 mm Separator Column and 50 mm Guard Column



**Figure 3-60.** Tubing Connections for 150 mm Separator Column and 35 mm Guard Column



**Figure 3-61.** Tubing Connections for Separator Column Only

3. Raise the lid of the column cartridge to open it.
4. Remove the fitting plug from the outlet fitting on the separator column. Orient the fitting with a flat side up (see [Figure 3-62](#)) and push the fitting into the opening at the front of the column cartridge until it stops.



**Figure 3-62.** Column Outlet Fitting Installed in Column Cartridge

5. Coil the separator column tubing inside the cartridge as shown in [Figure 3-57](#) or [Figure 3-58](#). Secure the column tubing and the inlet fitting in the clips on the column cartridge.
6. Secure the inlet and outlet fittings on the guard column (if used) in the column clips on the lid of the column cartridge.
7. Route the guard column inlet tubing (if used) or the separator column inlet tubing through the clip on the top edge of the column cartridge lid.
8. Close the lid (you should hear a click) and route the tubing into the slot on the front of the column cartridge (see [Figure 3-63](#)).

**NOTE** The cartridge lid should snap closed easily. If the lid does not close easily, do not force it. Open the lid and verify that the columns and tubing are installed correctly and secured in the clips.



**Figure 3-63.** Column Cartridge Closed

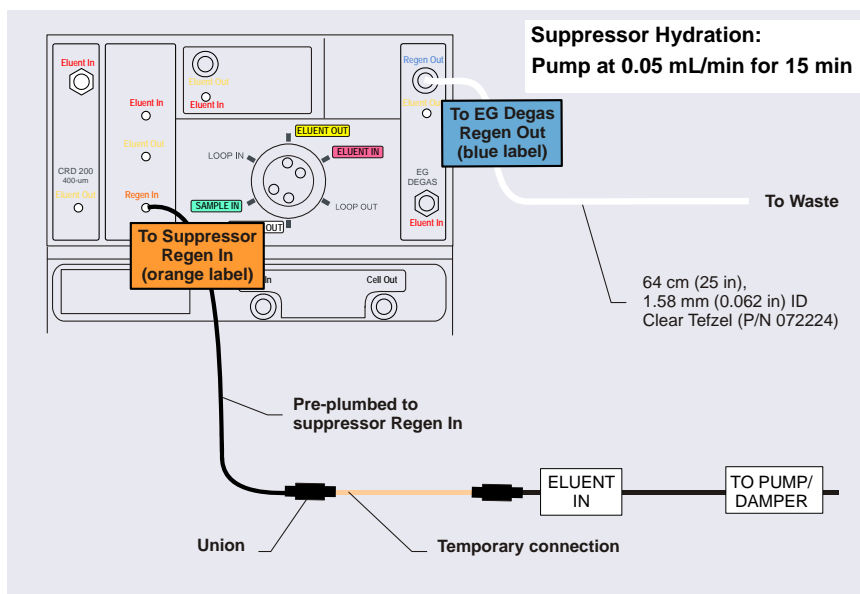
9. Slide the column cartridge into the Dionex IC Cube column oven and tighten the two thumbscrews.

Capillary IC

### Hydrating the Suppressor

If a suppressor is not installed, go on to [“Completing the High-Pressure Fluidic Connections”](#) on page 95.

1. Disconnect the backpressure tubing/pump outlet tubing assembly from the EGC **INLET** port and connect it to the tubing exiting the **Regen In** port of the capillary suppressor cartridge (see [Figure 3-64](#)). This is a temporary connection.



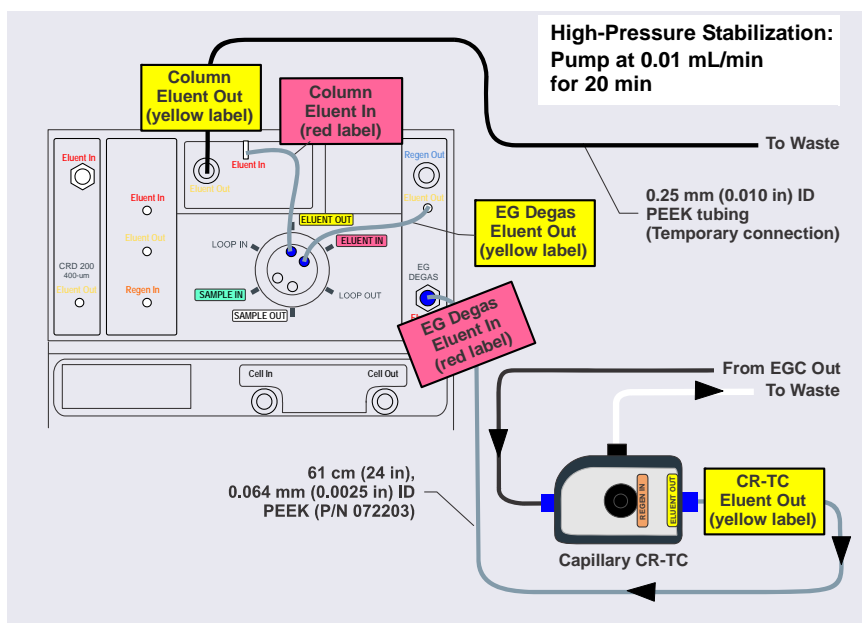
**Figure 3-64.** Flow Schematic for Hydrating the Capillary Suppressor

2. Locate the 64 cm (25 in) piece of 1.58 mm (0.062 in) ID clear ETFE (ethylene tetrafluoroethylene) tubing (P/N 072224) in the EG Ship Kit (P/N 072047). Connect this line to the **Regen Out** port of the EG degas cartridge. Direct the other end of the tubing to waste.
3. Set the pump flow rate to 0.05 mL/min and turn on the pump flow.
4. Run the pump for 15 minutes and then turn off the pump flow. This hydrates the capillary suppressor and flushes the internal Dionex IC Cube regenerant manifold chambers.
5. Disconnect the backpressure tubing/pump outlet tubing assembly from the suppressor **Regen In** port.

Capillary  
IC

## Completing the High-Pressure Fluidic Connections

1. Remove the backpressure tubing from the **EGC IN** line.
2. Use a high-pressure (blue) fitting to connect the pump outlet tubing to the **EGC INLET** port.
3. Locate the 61 cm (24 in) piece of 0.062 mm (0.0025 in) ID blue PEEK tubing (P/N 072203) in the EG Ship Kit (P/N 072047).
4. Use high-pressure (blue) fittings to connect this tubing between the **Eluent Out** port of the capillary CR-TC and the **Eluent In** port of the capillary EG degas cartridge (see [Figure 3-65](#)).



**Figure 3-65.** Flow Schematic for High-Pressure System Stabilization

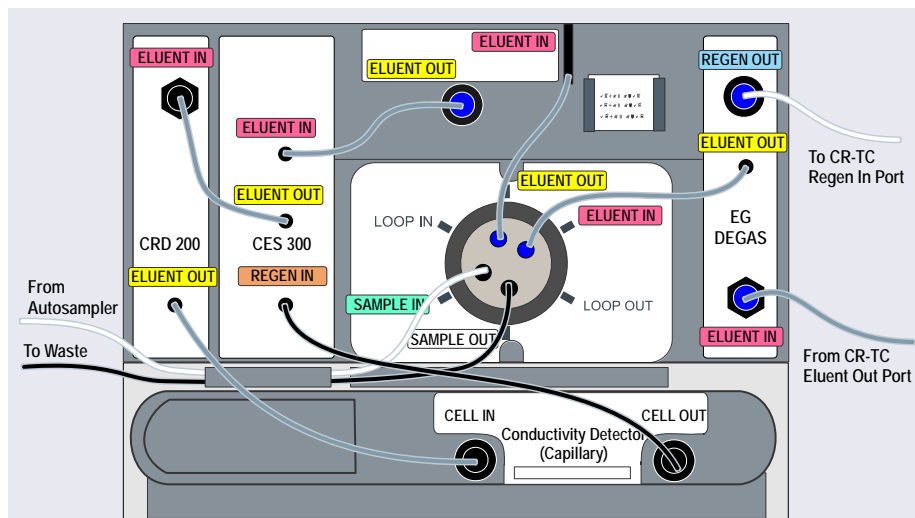
5. Set the pump flow rate to 0.01 mL/min and turn on the pump flow.
6. Wait until liquid is flowing out of the **Eluent Out** tubing of the capillary EG degas cartridge.
7. Use a high-pressure (blue) fitting to connect the tubing from the **Eluent Out** port of the capillary EG degas cartridge to the **Eluent In** port (2) of the injection valve. Wait about 60 seconds before tightening the connection.

8. Wait until liquid is flowing out of the **Eluent Out** port (3) of the injection valve.
9. Use a high-pressure (blue) fitting to connect the tubing from the **Eluent In** port of the column cartridge to the **Eluent Out** port (3) of the injection valve.
10. Connect a piece of 0.25 mm (0.010 in) ID PEEK tubing to the **Eluent Out** port of the column cartridge. Direct the other end of the tubing to waste. This is a temporary connection.
11. Wait for 20 minutes to allow the system pressure to stabilize.

**Capillary IC**

**Completing the Low-Pressure Fluidic Connections for Conductivity Detection**

For reference, [Figure 3-66](#) illustrates completed connections for conductivity detection.



**Figure 3-66.** Completed Dionex IC Cube Plumbing for Conductivity Detection

**NOTE** The **LOOP IN** and **LOOP OUT** labels on the injection valve are for use when the optional 6-port injection valve is installed. The standard 4-port valve installed on the Dionex IC Cube has an internal loop.

1. Remove the temporary tubing from the **Eluent Out** port of the column cartridge.
2. Wait until liquid is flowing out of the **Eluent Out** port of the column cartridge.
3. Use a high-pressure (blue) fitting to connect the tubing from the **Eluent In** port of the suppressor cartridge to the **Eluent Out** port of the column cartridge. Wait about 60 seconds before tightening the connection.
4. Wait until liquid is flowing out of the **Eluent Out** tubing of the suppressor cartridge.
  - If a CRD cartridge is installed, connect the tubing to the **Eluent In** port of the CRD cartridge. Wait about 60 seconds before tightening the connection. Wait until liquid is flowing out of the **Eluent Out** tubing of the CRD cartridge and then connect this tubing to the **Cell In** port of the conductivity detector. Wait about 60 seconds before tightening the connection.
  - If a CRD cartridge is *not* installed, connect the **Eluent Out** tubing of the suppressor to the **Cell In** port of the conductivity detector. Wait about 60 seconds before tightening the connection.
5. Connect the **Regen In** tubing from the suppressor cartridge to the **Cell Out** port of the conductivity detector. Wait about 60 seconds before tightening the connection.
6. Connect the ETFE line from the **Regen Out** port of the EG degas cartridge to the **Regen In** port of the CR-TC.
7. 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.

8. Route tubing inside the DC through the tubing trays below the Dionex IC Cube (see [Figure 3-67](#)), as described below:



**Figure 3-67.** Dionex IC Cube Tubing Trays (System #2 of Dual System Shown)

- a. Press the sample in and sample out lines from the injection valve into the tubing tray on the front of the Dionex IC Cube and route the lines through the DC left side slot to the autosampler (see [Figure 3-67](#)).
- 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 3-68](#)).
  - Press the **Eluent In** line from the EG degas cartridge of system #1 into the tubing trays below the Dionex IC Cube of system #2 and then route the line out the DC right side slot to the EG.



**Figure 3-68.** Completed Dionex IC Cube Plumbing for a Dual Conductivity Detection System

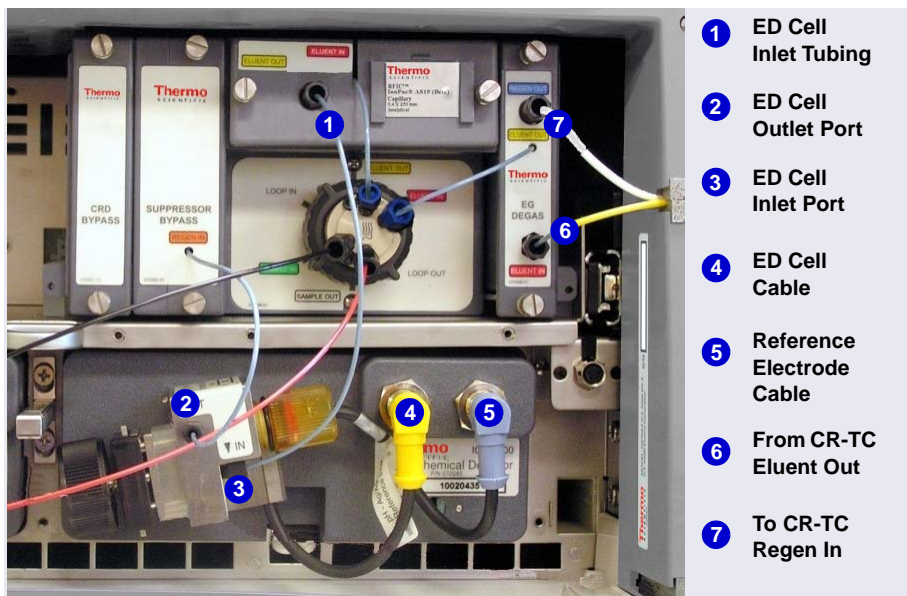


9. Go on to [Section 3.20](#).

Capillary  
IC

### Completing the Low-Pressure Fluidic Connections for Electrochemical Detection

For reference, [Figure 3-69](#) shows the Dionex IC Cube plumbing after all connections for electrochemical detection are completed.



**Figure 3-69.** Completed Dionex IC Cube Plumbing for Electrochemical Detection (pH-Ag/AgCl Reference Electrode Version Shown)

1. Before completing the fluidic connections, install the working electrode and the reference electrode in the cell. Refer to [Section B.1](#) for instructions.
2. Locate the ED Cell Inlet Tubing Kit (P/N 074221) shipped with the cell. The kit contains a 17 cm (6.75 in) piece of blue capillary tubing (P/N 071870) and the fittings needed for connecting it between the column and the cell inlet.
3. Remove the temporary tubing from the **Eluent Out** port of the column cartridge.
4. Wait until liquid is flowing out of the **Eluent Out** port of the column cartridge.

5. Use a 10-32 fitting bolt (P/N 043275) and 10-32 double-cone ferrule (P/N 043276) to connect the cell inlet tubing (P/N 071870) to the **Eluent Out** port of the column cartridge (see [Figure 3-69](#)). Wait about 60 seconds before tightening the connection.
6. Wait until liquid is flowing out of this tubing and then use the long 10-32 fitting bolt (P/N 057227) and split-cone ferrule (P/N 062978) to connect the tubing to the **Cell In** port of the electrochemical detector. Wait about 60 seconds before tightening the connection.
7. Orient the cell assembly with the PEEK yoke knob on the left and then push the cell onto its mounting location on the ED (see [Figure 3-69](#)).
8. Connect the **Regen In** tubing from the suppressor bypass cartridge to the **Cell Out** port of the electrochemical detector.
9. Connect the reference electrode cable and the cell cable.
10. Locate the 64 cm (25 in) piece of 1.58 mm (0.062 in) ID clear ETFE tubing (P/N 072224) in the EG Ship Kit (P/N 072047). Connect this line between the **Regen In** port of the CR-TC and the **Regen Out** port of the EG degas cartridge.
11. 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.
12. Press the sample in and sample out lines from the injection valve into the tubing tray on the front of the Dionex IC Cube (see [Figure 3-67](#)) and route the lines through the DC left side slot to the autosampler.
13. If you are using a PdH reference electrode, follow the instructions in the next section to condition the electrode before initial use.
14. Go on to [Section 3.20](#).

### Conditioning the PdH Reference Electrode

Condition the PdH reference electrode after plumbing the cell:

1. On the Chromeleon 7ePanel 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. **EG** panel: Enter 100 mM in the **Target Concentration** field. This turns on the power to the EGC, also.
  - c. Verify that eluent is exiting the cell.
  - d. **ED** panel: Set the reference electrode mode to **PdH**.
  - e. Select the 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 EGC power and the cell voltage.

Analytical  
IC

## 3.19 Plumbing an Analytical IC System

### 3.19.1 Plumbing the EG for Analytical IC Applications



The 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 d'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 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.

Analytical  
IC

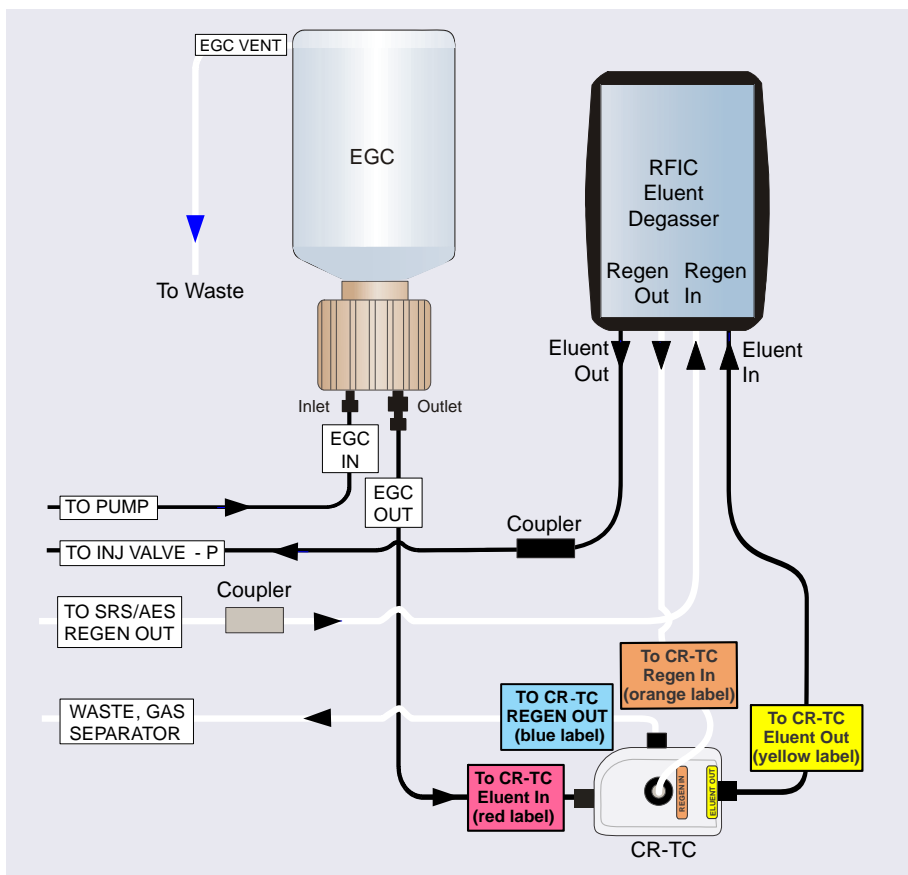
### Before Beginning

Refer to the 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 EGC-CO<sub>3</sub> EGC and EPM Electrolytic pH Modifier require specialized procedures for installation and condition-

ing. For details, refer to the product manuals. The manuals are included on the Thermo Scientific Reference Library DVD (P/N 053891).

[Figure 3-70](#) illustrates the liquid flow path through the EG components in an analytical IC system after all conditioning and plumbing connections are complete.



**Figure 3-70.** EG Flow Schematic: Analytical Flow Version

**NOTE** Some RFIC systems require a backpressure coil. If the system pressure is below 14 MPa (2000 psi) at system equilibration (see [Section 3.21](#)), install a backpressure coil between

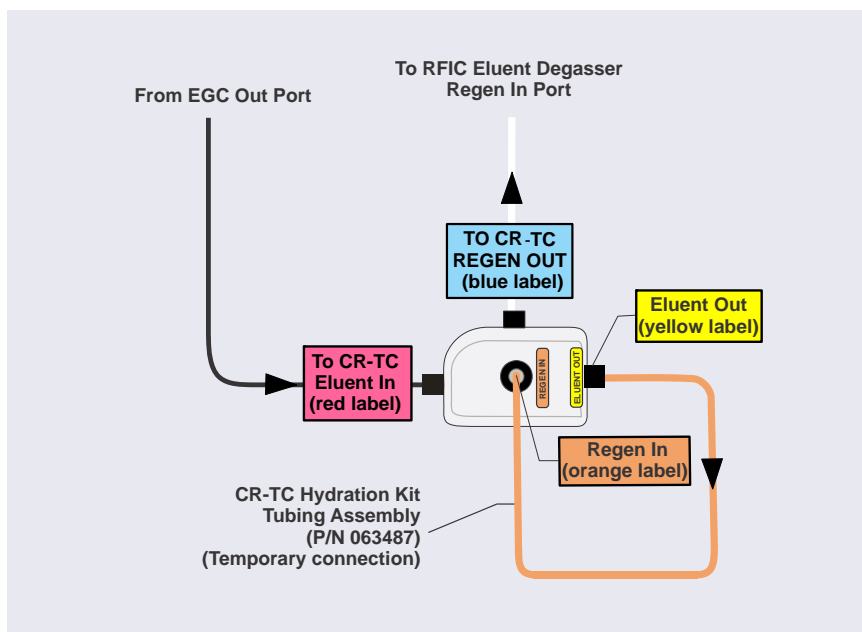
the injection valve and the **ELUENT OUT** port on the EGC (see [Section 3.21.1](#)).

Analytical  
IC

### Hydrating the CR-TC

Always hydrate a new CR-TC before initial operation. This requires pumping ASTM filtered, Type I (18 megohm-cm) deionized water through the CR-TC for 10 minutes while bypassing the analytical columns and the suppressor.

1. Fill the eluent reservoir with ASTM filtered, Type I (18 megohm-cm) deionized water.
2. Remove the plugs from the ports on the CR-TC.
3. Locate the CR-TC Hydration Tubing Kit (P/N 063487) provided in the EG Ship Kit (P/N 072047).
4. Refer to [Figure 3-71](#) to plumb the four ports on the CR-TC for the hydration procedure.



**Figure 3-71.** CR-TC Plumbing for Hydration: Analytical Flow Version

5. In Chromeleon:
  - a. Verify that the suppressor is turned off.

**IMPORTANT**

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

- b. Set the pump flow to the rate recommended for your application.
  - c. **Gradient pump only:** Enter 100% for the reservoir containing the deionized water.
  - d. Start the pump flow.
6. Allow the pump to run for at least 10 minutes.
7. Turn off the pump flow.
8. Disconnect the hydration tubing assembly from the **Eluent Out** and **Regen In** ports on the CR-TC.
9. Disconnect the pump outlet line from the **Eluent In** port on the CR-TC.

Analytical  
IC

**Installing the Eluent Generator Cartridge (EGC)**

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



The 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 d'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.



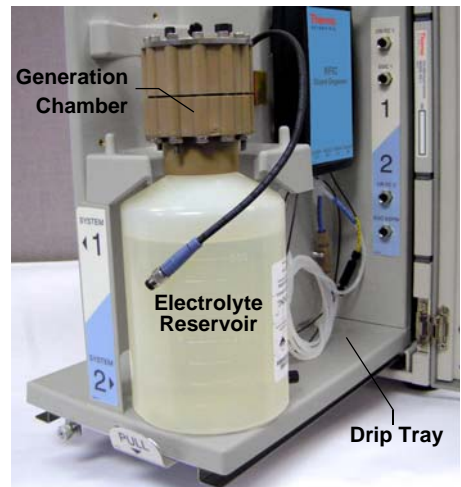
Die EGC-Kartusche enthält eine korrosive Base (KOH, LiOH oder NaOH), eine korrosive Säure (MSA) oder eine konzentrierte  $K_2CO_3$ -Lösung. Tragen Sie daher beim Umgang mit der Kartusche eine Schutzbrille und Handschuhe.

3. Verify that a 10-32 plug is installed in the EGC vent opening (see [Figure 3-72](#)). The plug prevents leakage from the vent opening when you turn over the cartridge.



**Figure 3-72.** EGC Vent Opening

4. Turn the EGC upside down and place it on the EG drip tray (see [Figure 3-73](#)). This is the “service position” for the cartridge.



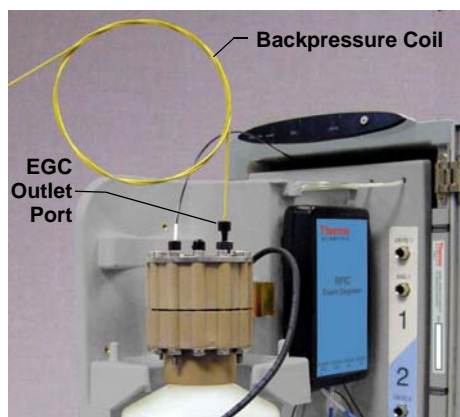
**Figure 3-73.** EGC Service Position

5. Remove the plugs from the **INLET** and **OUTLET** fittings on the eluent generation chamber (see [Figure 3-73](#)).
6. Locate the yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil (P/N 053765) in the EG Ship Kit (P/N 072047).



**Figure 3-74.** EGC Inlet and Outlet Fittings with Plugs

7. Connect one end of the backpressure coil to the EGC **OUTLET** port; leave the other end of the coil unconnected (see [Figure 3-75](#)).



**Figure 3-75.** EGC Outlet Connection for Cartridge Conditioning

**NOTE** The backpressure coil connection is temporary; it is used only while conditioning the EGC.

8. Connect the outlet line from the pump to the EGC **INLET** port.
9. While holding the EGC right-side up (with the electrolyte reservoir on top), shake the cartridge vigorously and tap it with the palm of your hand 10 to 15 times. Make sure all bubbles trapped in the eluent generation chamber are dislodged.



10. Slide the EGC (with the electrolyte reservoir on top) into the cartridge holder in the EG.
11. Push the EGC electrical cable firmly onto the **EGC 1** (or **EGC 2**) bulkhead connector (see [Figure 3-76](#)). Twist the ring on the cable connector fingertight to secure it.



**Figure 3-76.** Connecting the EGC Electrical Cable

12. Remove the 10-32 plug from the EGC vent opening and install a 10-32 luer adapter (P/N 053 980) in the vent opening. The luer adapter is shipped with the cartridge.

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

13. Pull the **VENT** line through the opening in the rear wall (above the bulkhead connectors) and connect the line to the luer adapter in the EGC vent opening (see [Figure 3-77](#)).



**Figure 3-77.** Connecting the EGC Vent Line

**IMPORTANT**

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

### Analytical IC

#### Conditioning the EGC

Always condition a new EGC before initial use. This requires directing the backpressure coil connected to the cartridge outlet to waste, and then generating 50 mM of eluent at 1.0 mL/min for 30 minutes.

1. Set a small temporary waste container (for example, a beaker) next to the EG. Direct the yellow backpressure coil from the EGC **OUTLET** port to the container. The backpressure must be at least 1.4 MPa (200 psi).
2. On the Chromeleon 7 ePanel Set or Chromeleon 6.8 panel tabset, select the following settings:
  - a. **DC** panel: Verify that the suppressor **Mode** is off.
  - b. **EG** panel: Verify that the CR-TC is off.

### IMPORTANT

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

- c. **Pump** panel:
    - **Gradient pump only:** Select the correct eluent channel (A, B, C, or D).
    - **All pumps:** Set the flow to 1.0 mL/min. This turns on the pump flow, also.
  - d. **EG** panel: Enter 50 mM in the **Target Concentration** field. This turns on the power to the EGC, also.
3. Run at the selected settings (1.0 mL/min at 50 mM) for 30 minutes.
  4. On the **Pump** panel, turn off the pump flow. This turns off the power to the EGC, also.

### Analytical IC

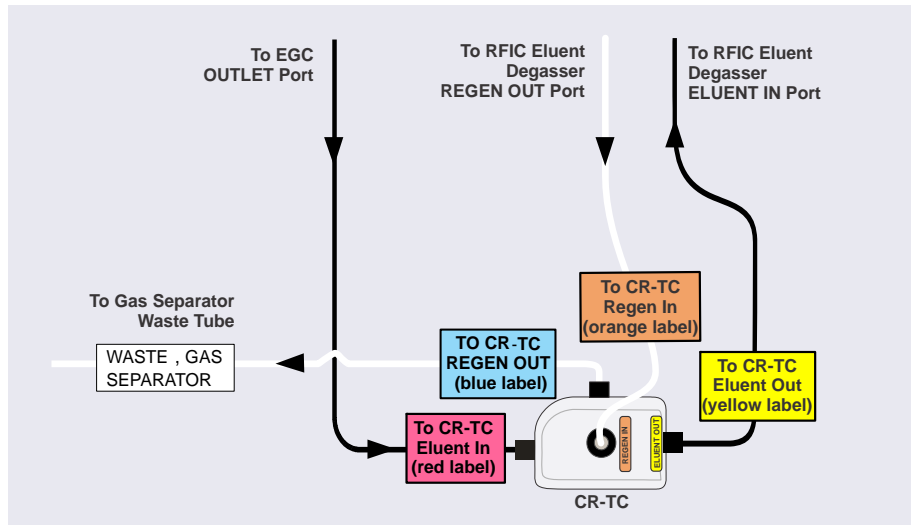
#### Completing the EGC Installation

1. Twist the ring on the EGC electrical cable counterclockwise to loosen it and then pull the cable straight out of the connector.
2. Remove the backpressure tubing from the waste container and remove the waste container.
3. Replace the 10-32 plug in the EGC vent opening.

4. Lift the EGC out of the holder, turn it upside down, and place it on the drip tray in the service position (see [Figure 3-73](#)).
5. Disconnect the backpressure coil from the EGC **OUTLET** port.
6. Connect the EGC **OUT** line to the EGC **OUTLET** port.
7. Turn the EGC right-side up, and check for bubbles. If necessary, shake and tap the cartridge to remove bubbles from the eluent generation chamber.
8. Reinstall the EGC in the holder. Remove the 10-32 plug from the vent opening and reinstall the luer adapter and vent line.
9. Push the EGC electrical cable firmly onto the **EGC 1** (or **EGC 2**) connector. Twist the ring on the cable connector fingertight to secure it.

Analytical  
IC**Completing the CR-TC Installation**

Refer to [Figure 3-78](#) and the following steps to connect the liquid lines to the CR-TC ports.



**Figure 3-78.** CR-TC Plumbing Diagram: Analytical Flow Version Installation Completed

1. Connect the outlet line from the EGC to the CR-TC **ELUENT IN** port.

2. A black coupler connects two of the lines from the RFIC Eluent Degasser. Disconnect the line labeled **TO CR-TC ELUENT OUT** (yellow label) from the black coupler and connect this line to the CR-TC **ELUENT OUT** port.
3. A tan coupler connects the other two lines from the RFIC Eluent Degasser. Disconnect the line labeled **TO CR-TC REGEN IN** (orange label) from the tan coupler and connect this line to the CR-TC **REGEN IN** port.
4. Locate the line labeled **TO CR-TC REGEN OUT** (blue label) and **WASTE GAS SEPARATOR** (white label), which is supplied with the RFIC Eluent Degasser.
  - a. Connect one end of the line to the CR-TC **REGEN OUT** port.
  - b. Route the other end of the line through the slot on the EG and connect it to the gas separator waste tube. For instructions, see [Section 3.20.1](#).
5. Check that no liquid lines are caught under the CR-TC and then push the CR-TC firmly onto the ball studs on the mounting plate. The CR-TC clicks into place when properly installed.
6. Push the CR-TC electrical cable firmly onto the **CR-TC 1** (or **CR-TC 2**) bulkhead connector. Twist the ring on the cable connector fingertight to secure it.

### Analytical IC

#### Completing the EG Installation

Refer to [Figure 3-70](#) and the following steps to complete the EG plumbing.

1. In the tubing chase on the bottom left side of the EG, locate the line labeled **TO DEGASSER REGEN IN** (orange label). Connect this line to the tan coupler on the line from the RFIC Eluent Degasser **REGEN IN** port.
2. The other end of the line exits the rear of the EG and is labeled **SRS/AES REGEN OUT** (blue label). Route this line to the DC and connect it to the suppressor **REGEN OUT** port.

**NOTE** For a dual-analysis system, repeat the steps above to install the second CR-TC and EGC.

### 3.19.2 Plumbing the DC for Analytical IC Applications

This section provides brief installation and plumbing instructions for the guard column, separator column, and suppressor. 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 the *ICS-5000 Ion Chromatography System Operator’s Manual* (Document No. 065031).

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

#### Before Beginning

1. Remove the guard column, separator column, and suppressor from their boxes.
2. Remove the fitting plugs from the ends of each column and from all ports on the suppressor.
3. Discard any tubing temporarily connecting the suppressor ports.
4. Locate the correct precut and labeled tubing package for each system to be installed (see [Table 3-2](#)). The tubing packages are shipped with the DC injection valve panel. Use tubing with white labels for system 1 (left side) and tubing with blue labels for system 2 (right side).
5. Before connecting each piece of tubing, remove the unions that connect the tubing in the tubing package.

Analytical IC

Plumbing the DC Injection Valve

1. Connect the tubing to the injection valve ports as shown in [Figure 3-79](#).
2. Route the line from port **P** to the EG and connect it to the black coupler on the line from the RFIC Eluent Degasser labeled **TO INJ VALVE-P** (white label).

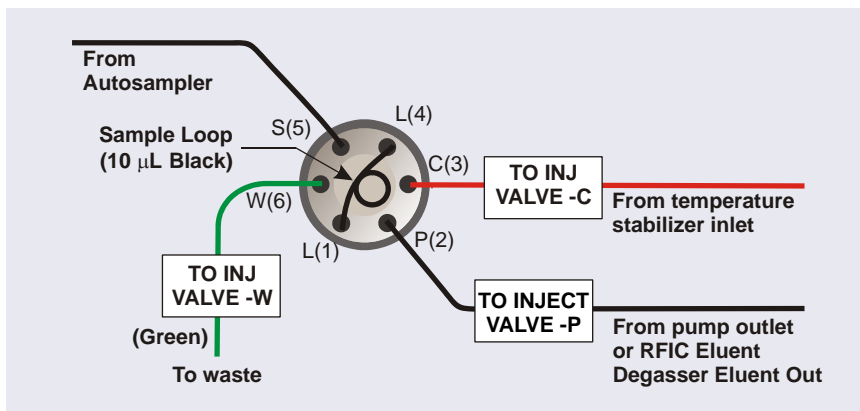


Figure 3-79. Injection Valve Plumbing

3. If required for your system, connect backpressure tubing to the pump outlet (see [Section 3.21.1](#)).
4. Route all lines through the appropriate tubing slots and secure the tubing in the tubing clips (see [Figure 3-80](#)).

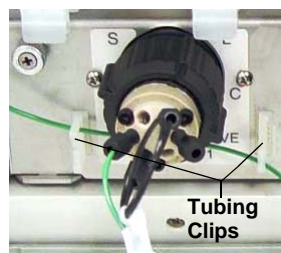
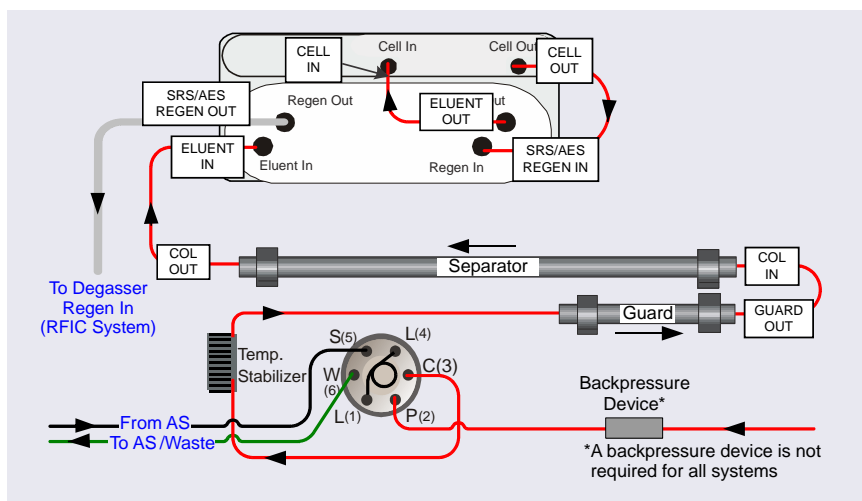


Figure 3-80. Tubing Clips

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

### Plumbing the Columns in the DC

1. Refer to the column manual for detailed installation and start-up instructions. The manuals are provided on the Thermo Scientific Reference Library DVD (P/N 053891).
2. Connect the tubing to the columns as shown in [Figure 3-81](#).
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.



**Figure 3-81.** Example DC Plumbing for Analytical IC with Conductivity Detection: System 1 (Left Side) Shown

#### Analytical IC

### Plumbing the Suppressor and Conductivity Cell in the DC

1. Refer to the suppressor manual for detailed installation and start-up instructions (including instructions for hydrating the suppressor).
2. Connect the tubing to the suppressor and cell as shown in [Figure 3-81](#).

3. RFIC-EG system:
  - a. Route the line from the suppressor **REGEN OUT** port to the EG.
  - b. Connect this line to the tan coupler on the line from the RFIC Eluent Degasser **REGEN IN** port.
  - c. Push the EG tray into the module until it locks in place and then close the EG door.
4. Non-RFIC-EG system:
  - a. Route the line from the suppressor **REGEN OUT** port to the rear of the DC via the tubing chase on the side of the DC upper compartment.
  - b. Connect this line directly to the gas separator waste tube (see [Section 3.20.1](#)).
5. Close the DC door.
6. Go on to [Section 3.20](#).

Analytical  
IC

**Plumbing the Electrochemical Cell in the DC**

1. Before completing the electrochemical cell plumbing, follow the instructions in [Appendix B](#) to install the cell electrodes and the cell inlet tubing.
2. Connect a piece of 0.25 mm (0.010 in) ID PEEK tubing (black) between the cell inlet and the column outlet.
3. Connect a piece of 0.25 mm (0.010 in) ID PEEK tubing (black) to the cell outlet. Direct the other end to waste.
4. Go on to [Section 3.20](#).



### 3.19.3 Plumbing the TC for Analytical IC Applications

The TC is available in the following configurations:

TC Description	Part Number
TC with one 2-position, 6-port high-pressure injection valve	064660
TC with two 2-position, 6-port high-pressure injection valves	064661
TC with one 2-position, 6-port high-pressure injection valve (left) and one 2-position, 10-port high-pressure injection valve (right)	064651
TC with no valves	064659

#### Before Beginning

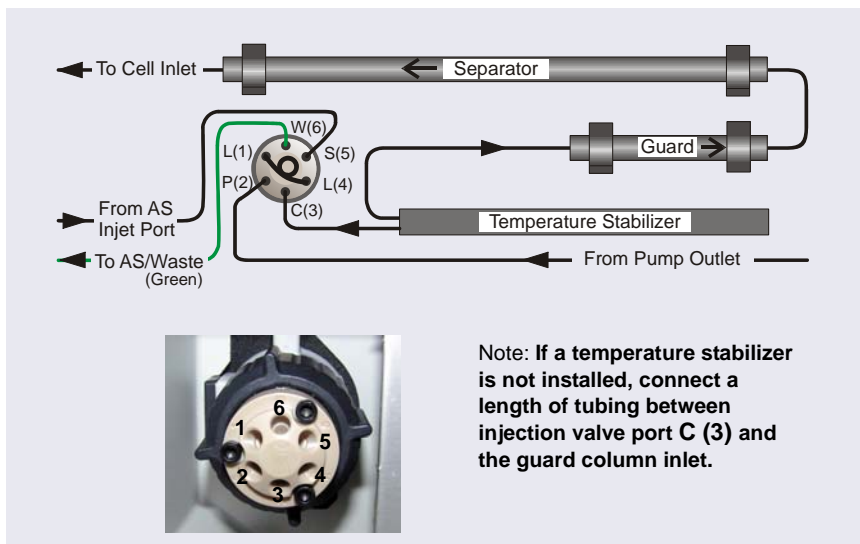
Locate these items in the TC Ship Kit (P/N 064789):

- Sample loop, 25  $\mu$ L (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

#### Plumbing the TC Injection Valve and Columns

1. Connect tubing from system components (AS inject port, temperature stabilizer, and pump) as shown in [Figure 3-82](#).

2. 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 amount of void volume in the system.



**Figure 3-82. TC Plumbing Schematic**

3. Check the arrow on each column label; it should point in the direction of flow (away from the injection valve).
4. Route the tubing connected to port **W (6)** to the AS drip tray. For details about connections to an AS, refer to [Section 3.6](#).
5. Route the separator column outlet tubing through the tubing chase and connect it to the detector cell inlet.
6. If required for your system, connect backpressure tubing to the pump outlet (see [Section 3.21.1](#)).
7. Route all lines through the appropriate tubing slots. Be sure to push tubing (especially the AS 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 ICS-Series Variable Wavelength Detector (VWD), Dionex ICS-Series Photodiode Array Detector (PDA), and 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 [Section 3.20](#).

## 3.20 Connecting Waste Lines

- If a Dionex AS Autosampler is installed, follow the instructions in [Section 3.6](#) to connect the waste line from the injection valve to the AS drip tray.
- If a Dionex AS-DV Autosampler is installed, direct the waste line from the injection valve to a waste container.

**Analytical IC**

- Non-RFIC-EG system: Connect the waste line from each Atlas™ Electrolytic Suppressor or SRS™ Self-Regenerating Suppressor directly to the gas separator waste tube (see [Section 3.20.1](#)).

**Analytical IC**

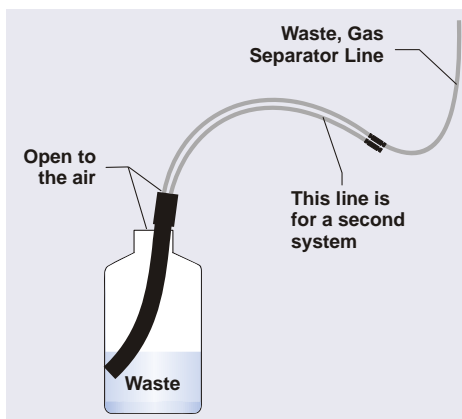
- RFIC-EG system:
  - a. Connect the suppressor waste line to the coupler on the tubing connected to the RFIC Eluent Degasser **REGEN IN** port.
  - b. Route the CR-TC waste line through the slot on the EG and connect it to the gas separator waste tube (see [Section 3.20.1](#)).

**NOTE** To maintain a positive siphon, position the waste container below the level of the Dionex ICS-5000 system.

### 3.20.1 Installing the Gas Separator Waste Tube

**NOTE** The gas separator waste tube is required in an analytical IC system if the Dionex ICS-5000 system includes an EG, or a DC with an Atlas suppressor or an SRS suppressor.

1. Locate the gas separator waste tube assembly (P/N 045460) provided in the DC Ship Kit (P/N 072011).
2. Connect the **WASTE, GAS SEPARATOR** line from the suppressor or RFIC Eluent Degasser to one of the lengths of 3 mm (1/8 in) ID white Teflon tubing on the gas separator waste tube assembly (see [Figure 3-83](#)).
3. If you are installing a dual-channel system, connect the other **WASTE, GAS SEPARATOR** line to the second length of white Teflon tubing on the assembly.
4. Place the gas separator waste tube assembly into the waste container.



**Figure 3-83.** Gas Separator Waste Tube Installation

5. Make sure the junction of the white Teflon tubing and the black polyethylene tubing is above the top of the container.
6. Make sure the gas separator waste tube and the waste container are open to the atmosphere (see [Figure 3-83](#)).

**NOTE** 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); attach the parts to the black tubing.



CAUTION

**DO NOT CAP THE WASTE CONTAINER:** The Dionex ICS-5000 Eluent Generator (EG), Atlas suppressor, and SRS suppressor 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 3-83](#)).



MISE EN GARDE

**NE FERMEZ PAS LE CONTENEUR DE GAZ RÉSIDUEL:** Le Dionex ICS-5000 Eluent Generator (EG), le Atlas Suppressor, et le SRS 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 »).



VORSICHT

**VERSCHLIESSEN SIE DEN ABFALLBEHÄLTER NICHT:** Der Dionex ICS-5000 Eluent Generator (EG), Atlas suppressor und SRS suppressor verwenden einen Elektrolyseprozess, durch olen 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.

## 3.21 Equilibrating the System

**NOTE** This section describes the steps for manually equilibrating the system. You can also use the Smart Startup feature in Chromeleon to automate system startup and equilibration. Refer to the Chromeleon Help for details.

1. On the Chromeleon 7 ePanel Set or Chromeleon 6.8 panel tabset, verify that each device listed below (if installed in your system) is turned on and

the selected setting for the device (flow rate, eluent concentration, temperature, and so on) is correct for you application:

- Pump
- EGC
- CR-TC
- EPM
- Suppressor
- Temperature control devices (DC upper and lower compartments, Dionex IC Cube column heater, CD cell heater, reaction coil heater, TC column compartment)

**NOTE** If a Dionex IC Cube is installed, set the temperature of the DC upper compartment to 15 °C. Set the temperature of the Dionex IC Cube column heater as required for the installed column type.

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 included 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 and make sure it is at the expected reading for the installed column and it is stable.

### Analytical IC

For an analytical system, install a backpressure coil if the system pressure is below 14 MPa (2000 psi) (see [Section 3.21.1](#)).

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

### 3.21.1 Installing a Backpressure Coil

In an analytical IC system, if the system pressure is below 14 MPa (2000 psi) during system equilibration (see [Section 3.21](#)), install a backpressure coil between the injection valve and the **ELUENT OUT** port on the 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 062453) includes four backpressure coils (see [Table 3-7](#)).

Part Number	Backpressure Coil Description	Flow Rate	Approximate Backpressure Added
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)
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 3-7.** Backpressure Coils

**IMPORTANT**

The recommended maximum operating pressure for the EG in an analytical system is 21 MPa (3000 psi). Excessive backpressure may rupture the tubing inside the RFIC Eluent Degasser.





## A • 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:

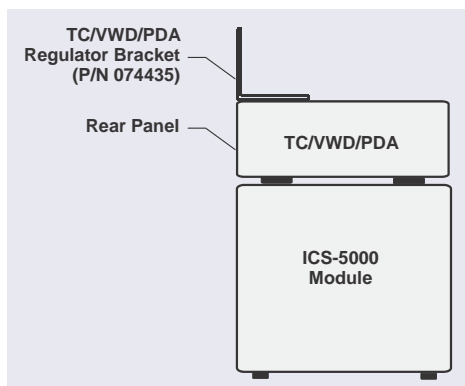
- The Dionex EO Eluent Organizer Regulator Kit (P/N 074422) is required when the DC is installed as the topmost module in the system. The kit includes a pressure regulator and gauge assembly with four outputs (for connections to four eluent reservoirs), as well as the tubing and fittings required.
- When the TC, ICS-Series Variable Wavelength Detector, or ICS-Series Photodiode Array Detector 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 Dionex EO Eluent Organizer 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 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.2 Connecting the Gas Source

1. Attach the Dionex EO Eluent Organizer 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 Dionex EO Eluent Organizer 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 Dionex EO Eluent Organizer Regulator Kit.
4. Push one end of the orange tubing into the **GAS IN** fitting on the Dionex EO Eluent Organizer 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.** *Dionex EO Eluent Organizer 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 Dionex EO Eluent Organizer Gas Regulator.



**Figure A-3.** Gas Connections to Reservoir

**NOTE** Low-pressure valves can be installed on the Dionex EO Eluent Organizer regulator support bracket (see [Section B.2](#)).

### A.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/po<sup>2</sup>).**



**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.



## 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](#))
- Dionex ICS-5000 Automation Manager ([Section B.3](#))

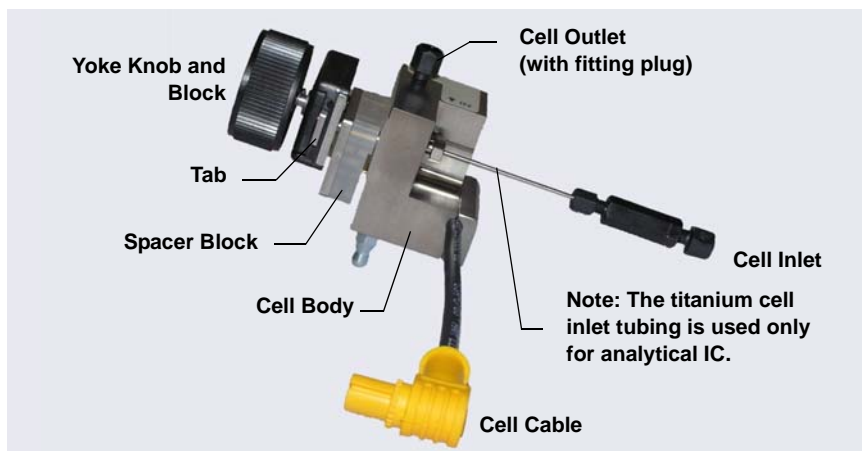
Analytical  
IC

### 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.



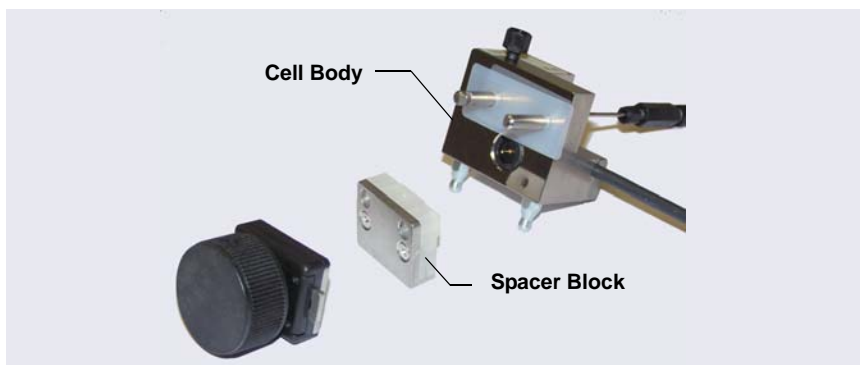
**Figure B-1.** ED Cell Components

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.

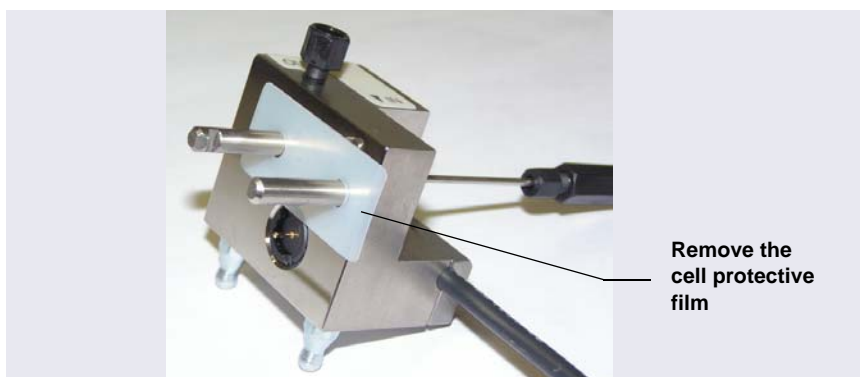
**NOTE** Handle the inside surfaces of the cell carefully to prevent scratches which may subsequently cause leaks.

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](#)).

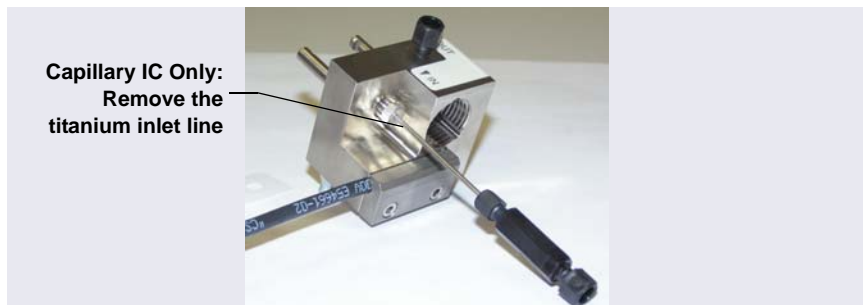


**Figure B-3.** *Removing the Cell Protective Film*



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 the *Product Manual for Disposable Electrodes* (Document No. 065040), which is included 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, make sure that you 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 069141, 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

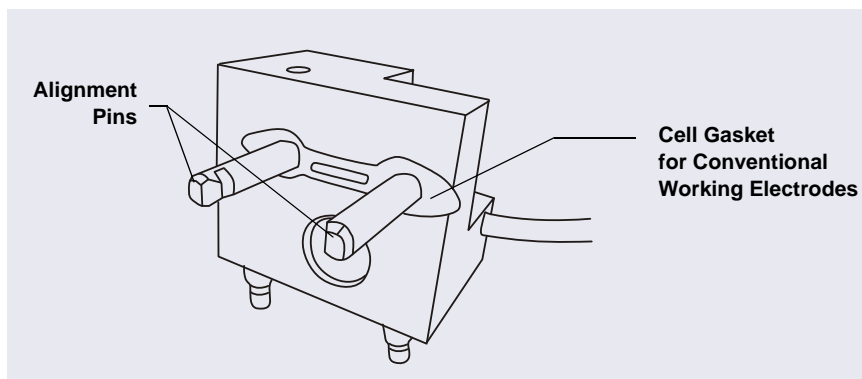
- **Do not polish new conventional working electrodes before installation.**
- After an electrode has been used for a period of time, a layer of contamination may build up. When this occurs, the electrode must be polished. For details, refer to *Polishing Gold Working Electrodes* (Document No. 031154).

**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.

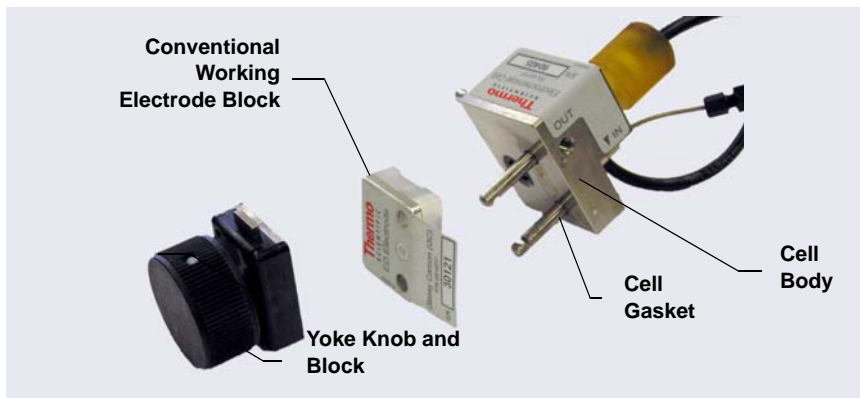
1. Use tweezers to install the gasket over the alignment pins on the cell body (see [Figure B-5](#)). When correctly installed, one end of the gasket extends beyond the cell body, to facilitate gasket installation and removal.



**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 below).

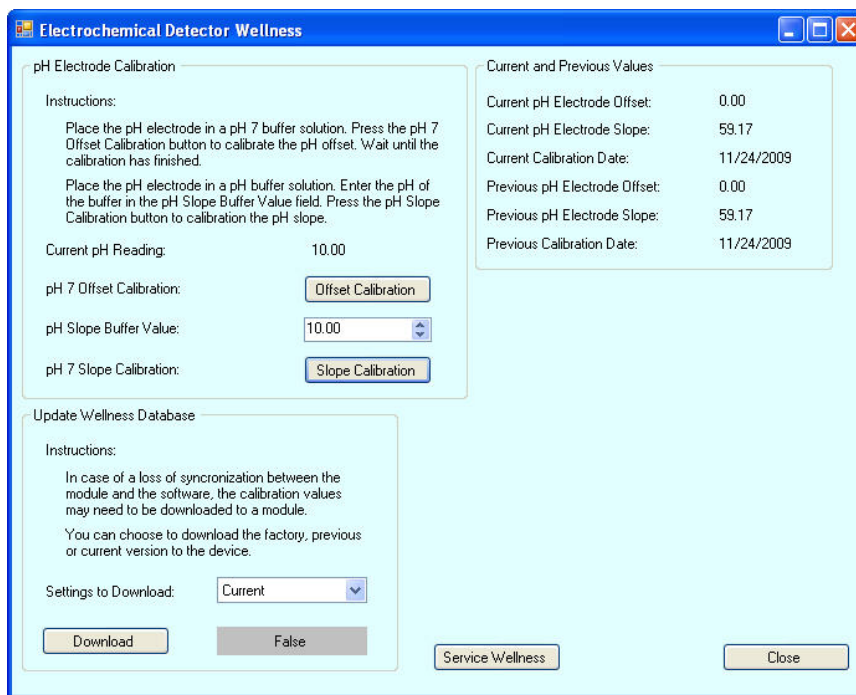
### Calibrating the pH-Ag/AgCl Reference Electrode

#### 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 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 139](#).

Capillary  
IC

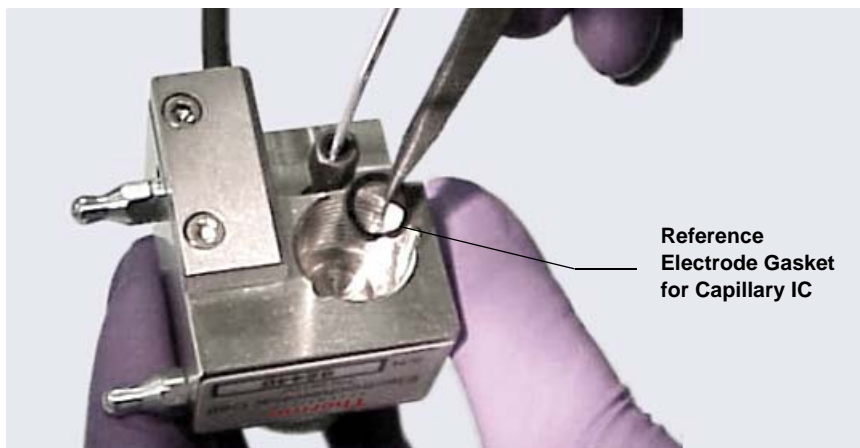
**Installing the pH-Ag/AgCl Reference Electrode in the Cell for Capillary IC Systems**

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](#)).



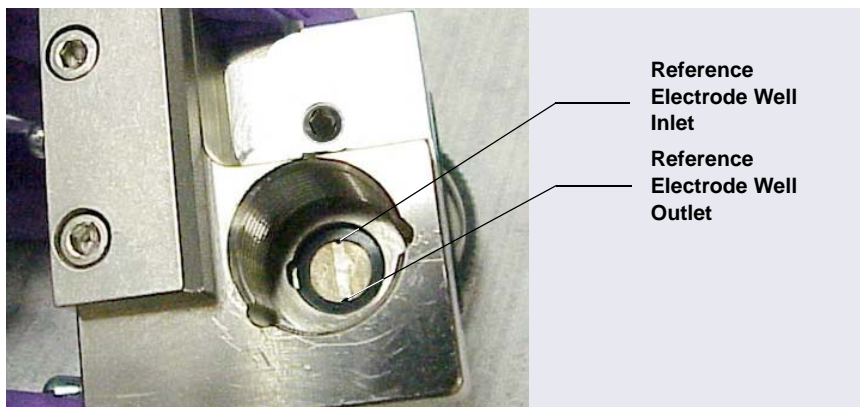
**Figure B-9.** pH-Ag/AgCl Reference Electrode O-Ring

- 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

- Make sure 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 3.18.2](#) 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. Connect the reference electrode cable and the cell cable.



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

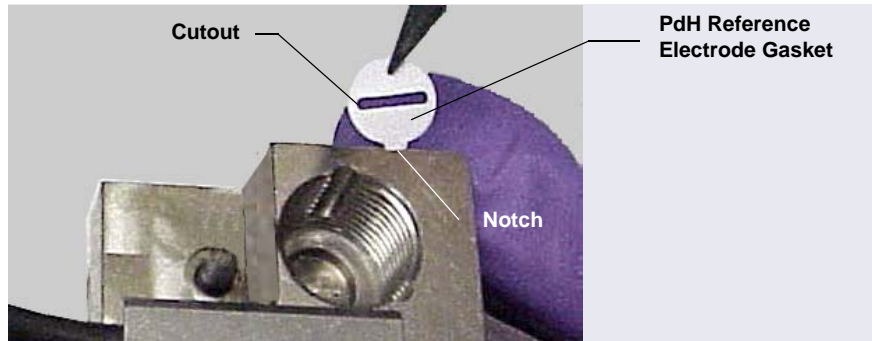
5. Refer to [Section 3.19.2](#) to complete the cell plumbing.

Capillary  
IC

### **B.1.5 Installing the PdH Reference Electrode in the Cell for Capillary IC Systems**

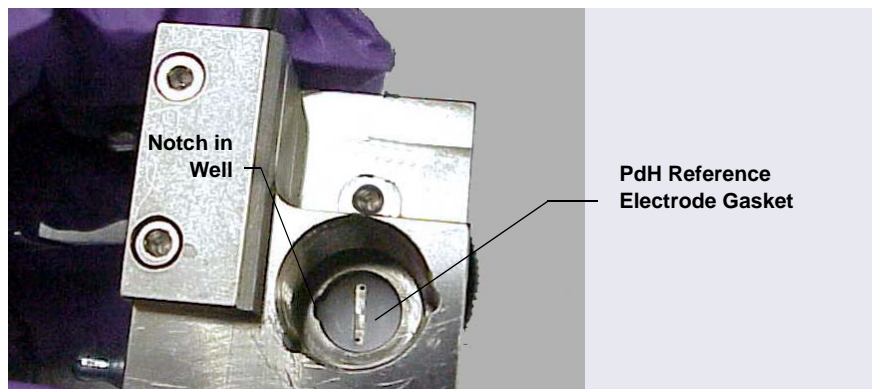
1. To avoid any hydraulic pressure buildup when inserting the reference electrode into the cell, make sure that fitting plugs are not installed on the cell inlet and outlet fittings.

- Using tweezers, grasp the PdH reference electrode gasket (P/N 072214) on its edge (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*

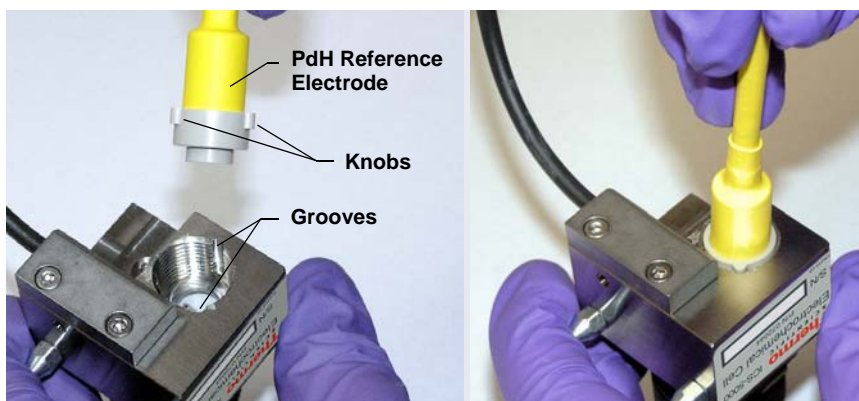
- Align the gasket so that the notched edge of the gasket aligns with the corresponding notch in the reference electrode well. Then, press the gasket into the well (see [Figure B-16](#)).



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

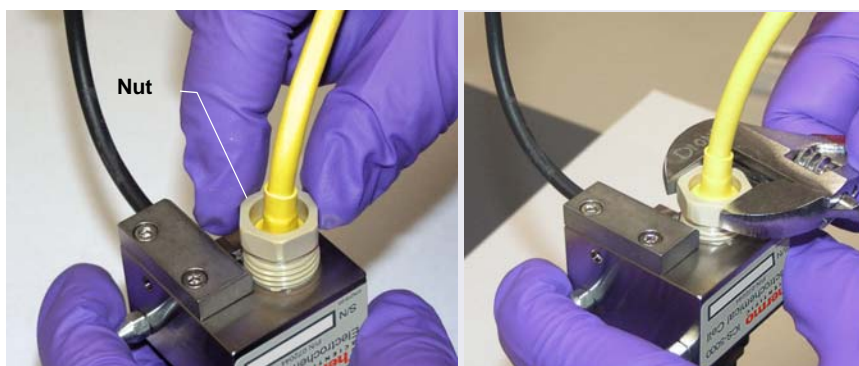
- Align the fitting on the end of the PdH reference electrode so that the knobs on the fitting align with the grooves in the reference electrode well (see [Figure B-17](#)).

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. To complete the cell plumbing, go on to [Section 3.18.2](#).

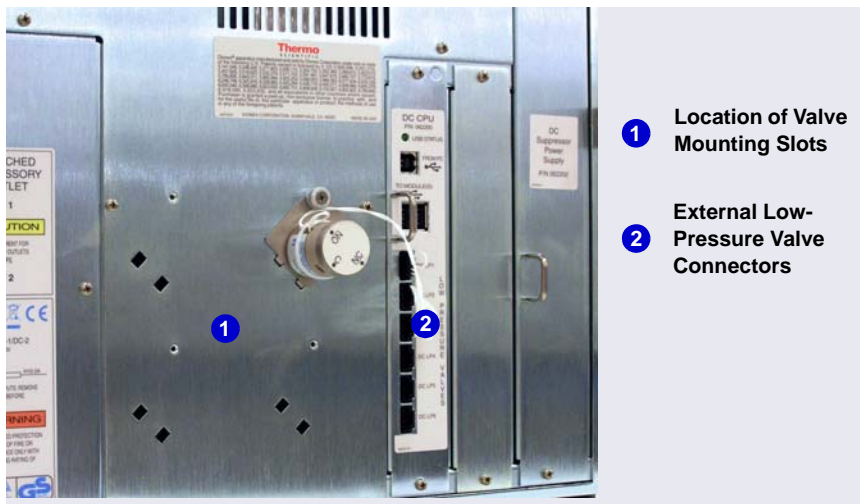
## **B.2 Installing Low-Pressure Valves in the DC**

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, refer to the instructions in the next section. To install low-pressure valves on the AM, see [Section B.3](#).

### **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 Dionex EO Eluent Organizer regulator stand bracket.
  - Four low-pressure valves can be installed on the DC rear panel.
  - If a Dionex EO Eluent Organizer Regulator Kit (P/N 062582) is installed (see [Appendix A](#)), 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.



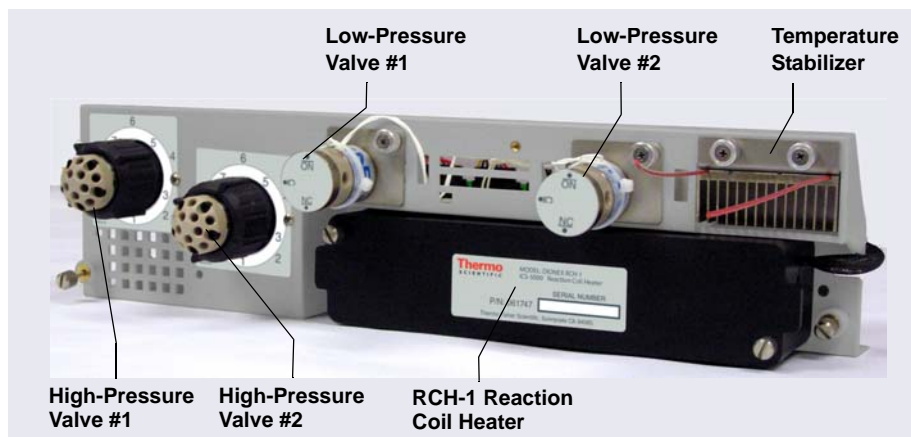
**Figure B-19.** DC Rear Panel: External Low-Pressure Valve Connections

## **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](#)).

## B.3 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 pre-concentration, and other functions (see [Figure B-20](#)). The AM installs into the upper compartment of the DC.



**Figure B-20.** *Dionex ICS-5000 Automation Manager: Example Configuration*

**NOTE** Because the AM requires the full width of the DC upper compartment, a Dionex 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, etc.) depend on the application. Refer to Chapter 3, “Configuration,” of the *Thermo Scientific Dionex ICS-5000 Ion Chromatography System Operator’s Manual* (Document No. 065342) 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	061738
One 10-port high-pressure valve, one low-pressure 3-way valve	061736
One 6-port high-pressure valve, one low-pressure 3-way valve	061740
AutoPrep configuration: 10-port high-pressure valve AutoPrep sample loop AutoPrep standard loops	066343
AM tray with no valves	061734

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

AM Component	Part Number
High-pressure valve, 6-port	061961
High-pressure valve, 10-port	061962
Low-pressure valve, 2-way	061745
Low-pressure valve, 3-way	061971
RCH-1 Reaction Coil Heater	061746
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 149](#) to install the AM in the DC.



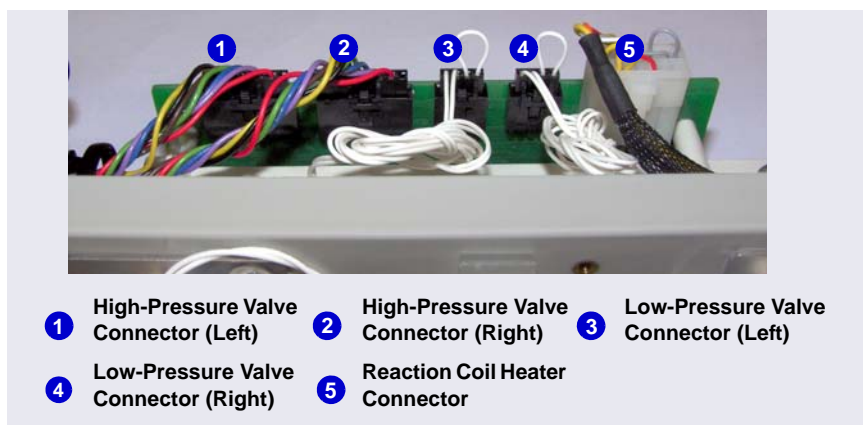
### B.3.1 Installing a High-Pressure Valve on the AM

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-21](#)).
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-21.** 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-22](#)). Uncoil the appropriate valve cable and plug it into the connector on the valve.



**Figure B-22.** Connections to the AM Prep Board

### **B.3.2 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-22](#)).
3. Thread the connector and wires through the opening next to the valve.



**Figure B-23.** *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-22](#)).

**NOTE** For instructions on how to install low-pressure valves outside the AM, refer to [Section B.2](#).

### **B.3.3 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-22](#)).

### B.3.4 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-20](#)).

### B.3.5 Installing the AM in the DC Upper Compartment

**IMPORTANT**

Always turn off the DC power before installing an AM.

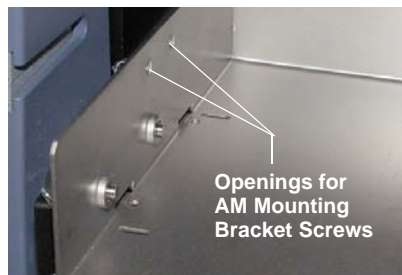
1. If the DC power is on, press the **POWER** button on the front of the DC for 2 seconds to turn off the power before continuing.
2. Locate the high-pressure valve labels shipped with the AM.
3. Unscrew the black locking ring on the front of the high-pressure valve. Attach the appropriate label (6-port 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-24](#)).



*Figure B-24. 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-24](#) for the right-side location and [Figure B-25](#) for the left-side location. Tighten the screws.



**Figure B-25.** *Openings for AM Mounting Bracket Screws (Left Side)*

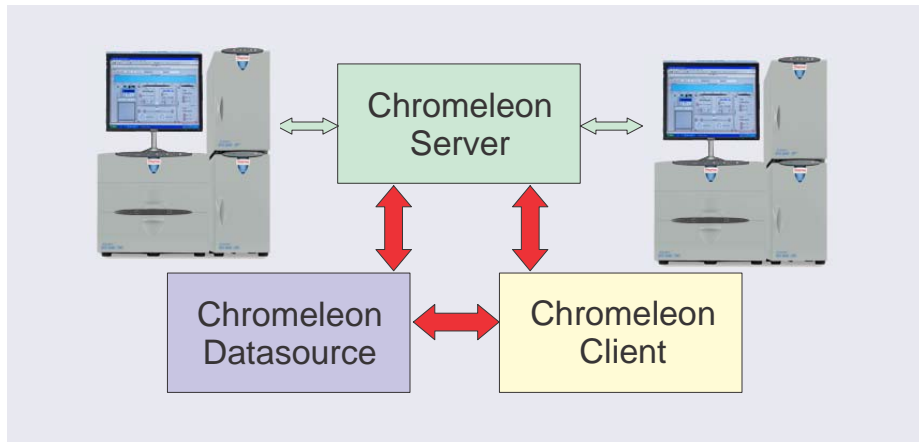
7. Place the AM on the component tray and slide it back into the mounting brackets.
8. Continue sliding until the AM is connected to the electrical receptacle on the back of the DC top component tray (see [Figure B-24](#)). Push firmly to seat the AM.
9. Tighten the locking screws in the right and left 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-26](#)).



**Figure B-26.** *DC with AM Installed*

## C • Networking Chromeleon 6.8 Computers

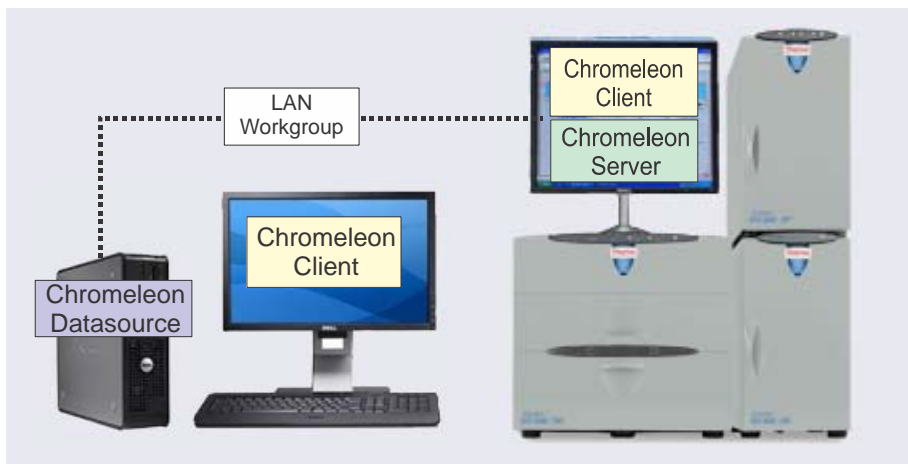
For routine Chromeleon 6.8 operation, the three Chromeleon 6.8 components shown in [Figure C-1](#) (*datasource*, *server*, and *client*) must be able to communicate. These three components can all be installed on one computer, or on three different computers, or in any other computer/component configuration. 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**



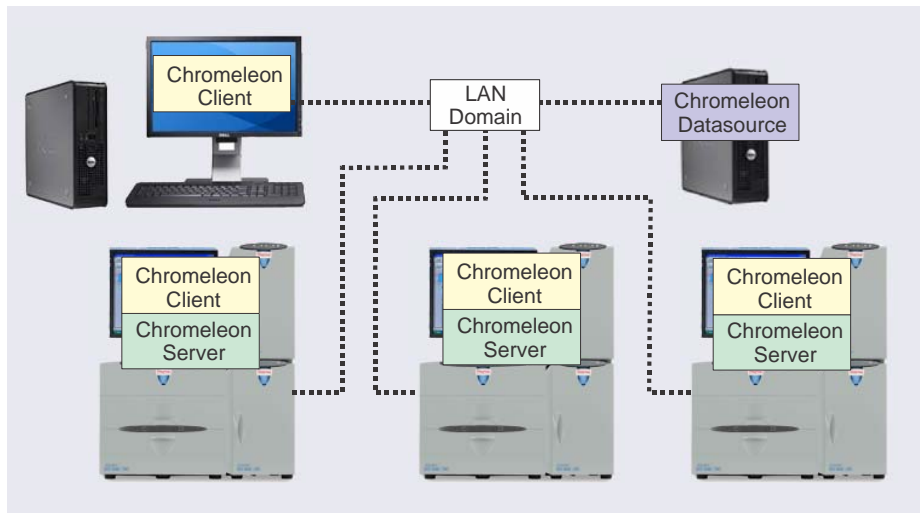
**Figure C-2.** Workgroup Example

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 well 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.

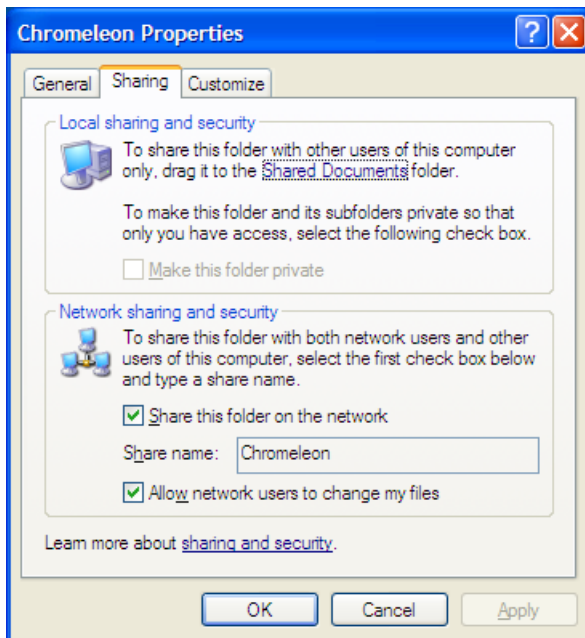
## C.1 Setting Up a Shared Datasource

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.

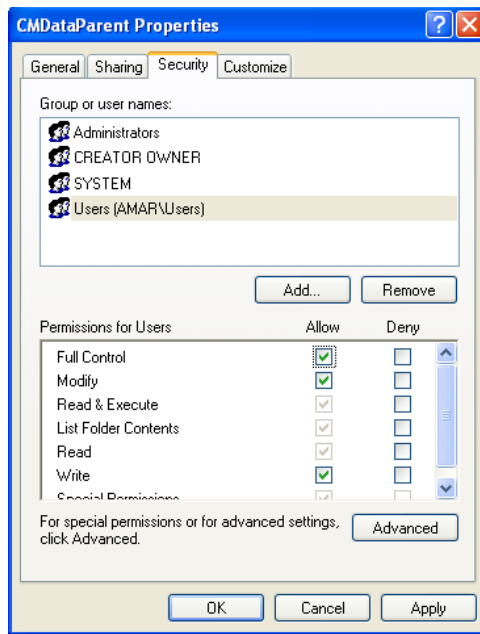


5. Select the **Allow network users to change my files** check box and click **OK**.

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

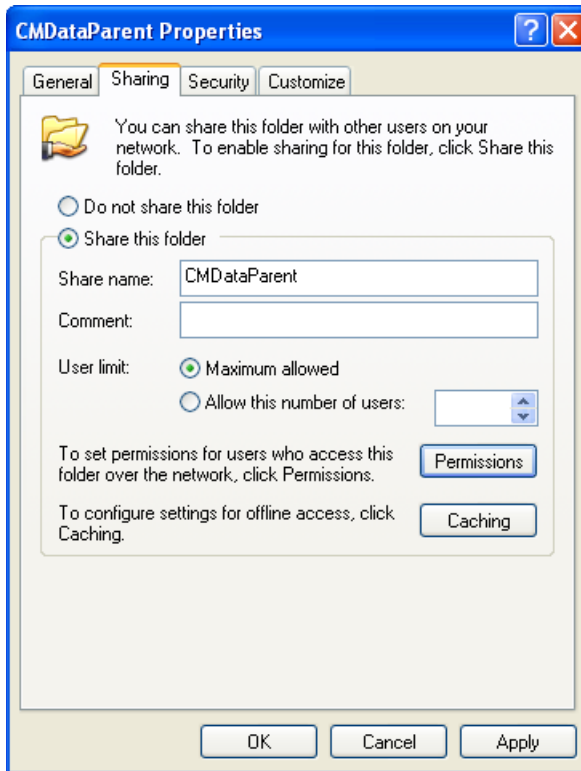
## C.1.2 Setting Up a Shared Datasource on a Domain

1. In Windows Explorer, create the datasource folder:
  - a. Create a new parent folder on the network server (for example, C:\CMDDataParent).
  - b. Under the new folder, create a subfolder in which to save the data (for example, C:\CMDDataParent\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

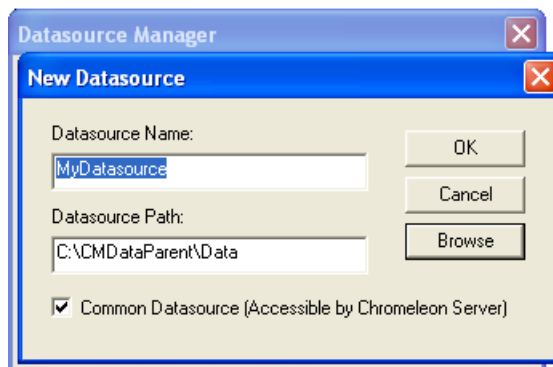
- c. For each user (or user group) that will log in locally to access data or control equipment, select the **Allow Full Control** check box. To add additional users or groups, click **Add**.
- d. Click **Apply**.
3. Share the datasource parent folder:
  - a. In the Properties dialog box, click the **Sharing** 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**.
- h. The new datasource appears in the Browser.
- i. 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.

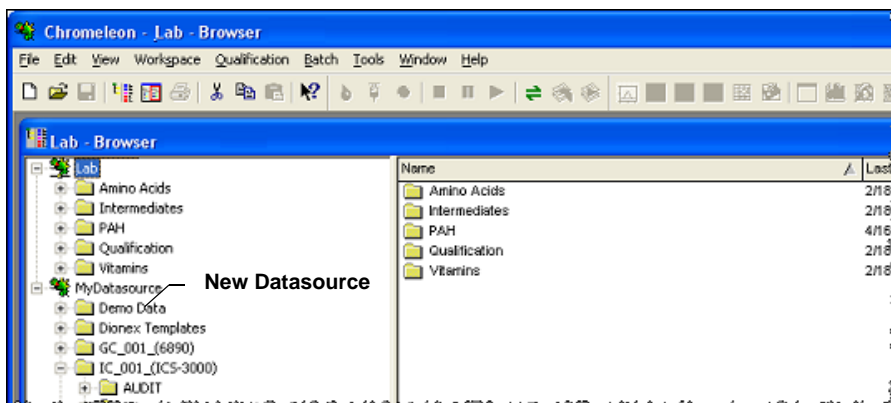


Figure C-8. Chromeleon 6.8 Client Browser: New Datasource

## 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.

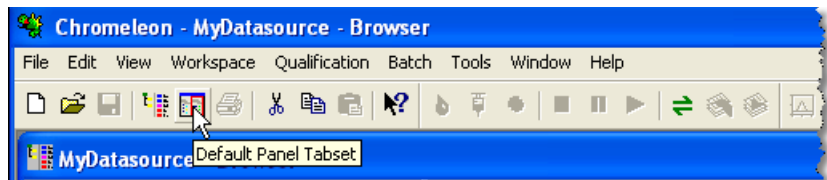
The Server Configuration dialog box appears.

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

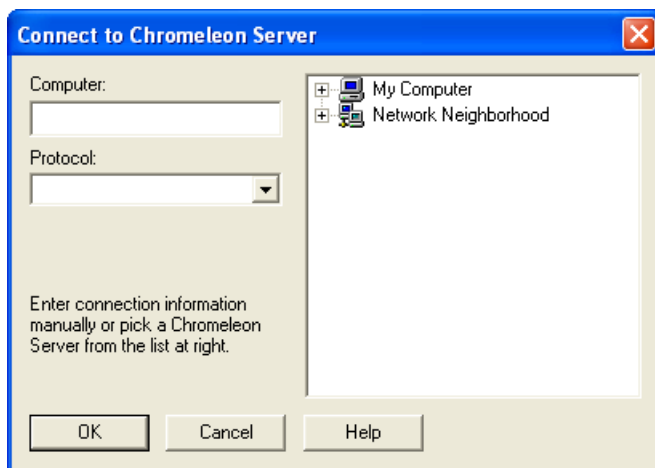
These instructions explain how to connect a panel tabset on the client to a server on a network. It is also possible to connect individual Control panels on the client to a timebase on a network server. Refer to the Chromeleon 6.8 Help for details.

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



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

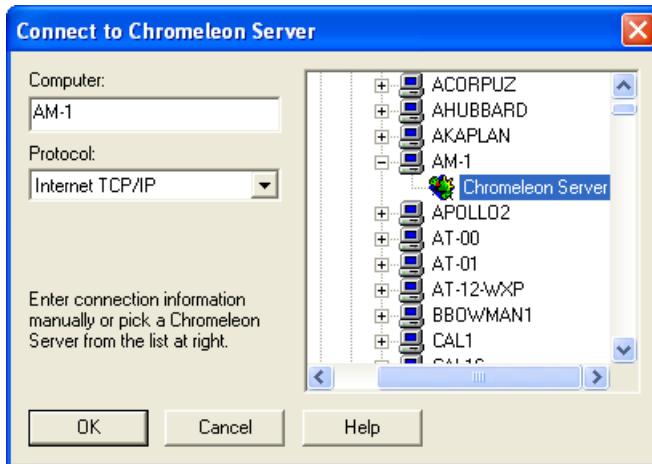
The Connect to Chromeleon Server dialog box appears (see [Figure C-10](#)).



**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.

