PRODUCT MANUAL

EG40 ELUENT GENERATOR MODULE
CR-TC ADD-ON KIT

(P/N 060476)

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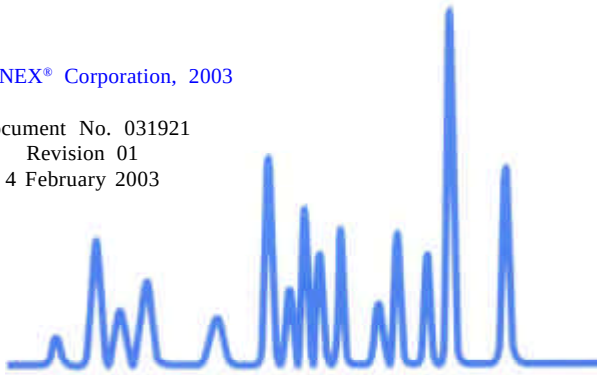
Document No. 031921
Revision 01
4 February 2003



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SECTION 1 - INTRODUCTION

1.1 Overview

This Installation Guide provides

- An overview of the new CR-TC Continuously Regenerated Trap Column,
- Instructions for installing the CR-TC and its controller,
- Routine operating instructions.

If you need more details, please refer to the CR-TC Product Manual (Document No. 031910) which provides detailed theory and descriptions of the CR-TC Trap Column. For information on the EG40 Product Manual (Document No. 031373) for instructions on EG40 startup and operation. These Product Manuals are all found on the Dionex Reference Library CD-ROM (P/N 053891).

1.2 The EG40 CR-TC Add-on Kit

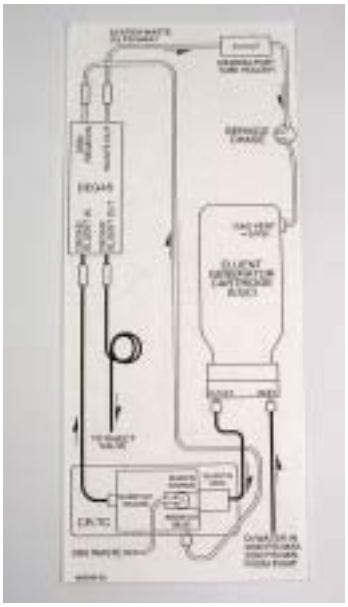
The EG40 Add-on Kit contains all components necessary for the installation and use of a Continuously Regenerated Trap Column (CR-TC). This kit includes the power supply and controller required to operate the CR-TC on an EG40 Eluent Generator. Components in the EG40 CR-TC Add-on Kit are illustrated in Figure 2.

1.3 The CR-TC Trap Column

The CR-TC is a high-pressure electrically regenerated trap column that operates without the need for off-line chemical regeneration. The device, when plumbed after the EluGen® cartridge, removes all anionic or cationic contaminants in the eluent and provides low drift during gradient operations. A CR-TC is available in two formats, the CR-ATC (P/N 060477) for anion applications and the CR-CTC (P/N 060478) for cation applications. A single CR-TC format is used for both standard bore (4-mm ID) applications and for microbore (2-mm and 3-mm ID) applications.

Figure 1
CR-TC Controller Box and CR-TC with EG40 Unit

1.4 EG40 CR-TC Add-on Kit Components



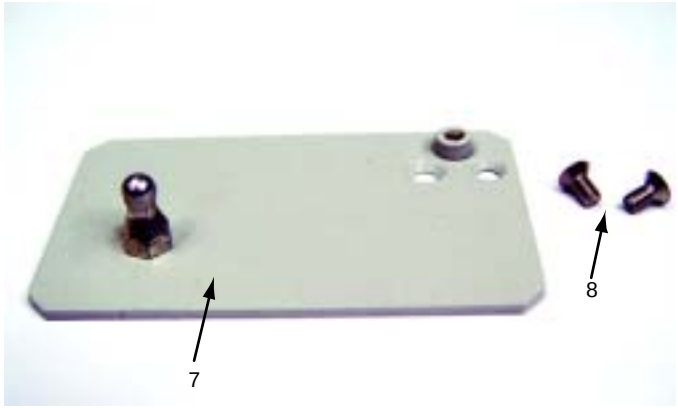
1. Plumbing Schematic Door Label (P/N 060599)

2. CR-TC Controller (P/N 060455)

3. Vinyl Coated Tubing Clamp (P/N 056128, qty 2)
4. Tie Wrap Mount with Adhesive (P/N 216091 qty 2)

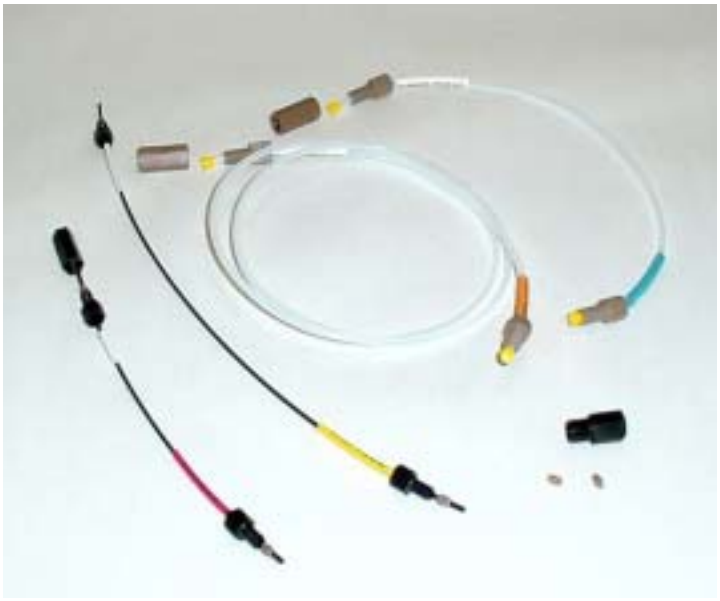
5. Universal Power Supply (P/N 940058)
Velcro® Fastener Tape (P/N 038426, on back of Universal Power Supply for mounting)

6. CR-TC Extension Power Cable (P/N 060460)



7. CR-TC Mounting Plate (P/N 060453)
8. Plate Screws (P/N 045795, qty 2)

Figure 2
EG40 CR-TC Add-on Kit Components



9. Precut Installation Tubing with Colored Labels and Fittings (P/N 060625)

Note: The fittings and tubing are shipped in separate bags in the ship kit and require assembly. See Figure 23.

Figure 2 (continued)
EG40 CR-TC Add-on Kit Components

1.5 Flow Diagram for EG40 with CR-TC Trap Column

Deionized water is delivered by an isocratic or gradient pump to the EluGen® Cartridge. DC current is applied to the EluGen Cartridge to produce either potassium hydroxide for anion exchange applications or methanesulfonic acid for cation exchange applications. The electrolytically generated eluent flows through a CR-ATC or CR-CTC Continuously Regenerated Trap Column, then into the high pressure Degas Assembly, through the injection valve to the analytical column and finally to the detector cell. The detector cell effluent is then recycled through the SRS® or Atlas® Suppressor regen chambers to the regen chamber of the CR-TC Trap Column, then to the EG Degas Assembly and finally to waste. Figure 3 is a flow diagram of an IC system with a CR-TC installed in an EG40.

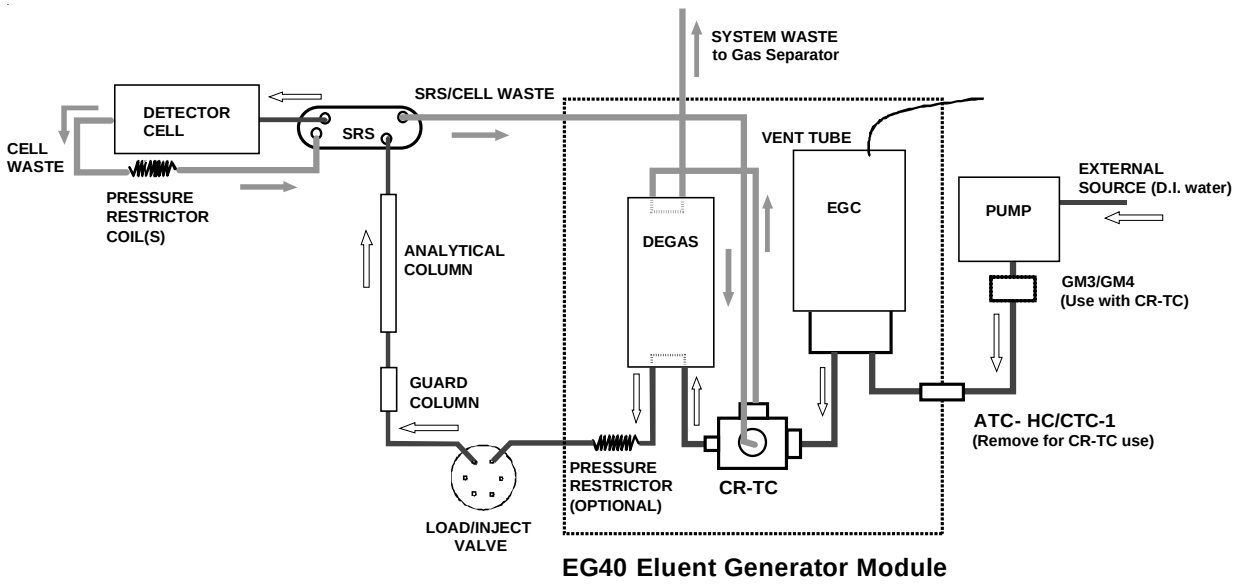


Figure 3
System Flow Diagram for the Eluent Generator with CR-TC

SECTION 2 - INSTALLATION

2.1 Installing the CR-TC Controller

A CR-TC Power Controller is used to power the CR-TC device. The CR-TC Controller should be installed inside the EG40 module with the AC power supply box mounted on the inside door panel of the EG40 chassis. Follow the steps below to install the CR-TC controller and its cabling. Ensure power to the pump and the suppressor is off before installing the CR-TC Trap Column.

2.1.1 Mounting the CR-TC Controller

A. Temporarily remove and store the two screws located on the top half of the EG40 module door (inside panel). These will be used to attach the CR-TC Controller box to the door. See Figure 4.

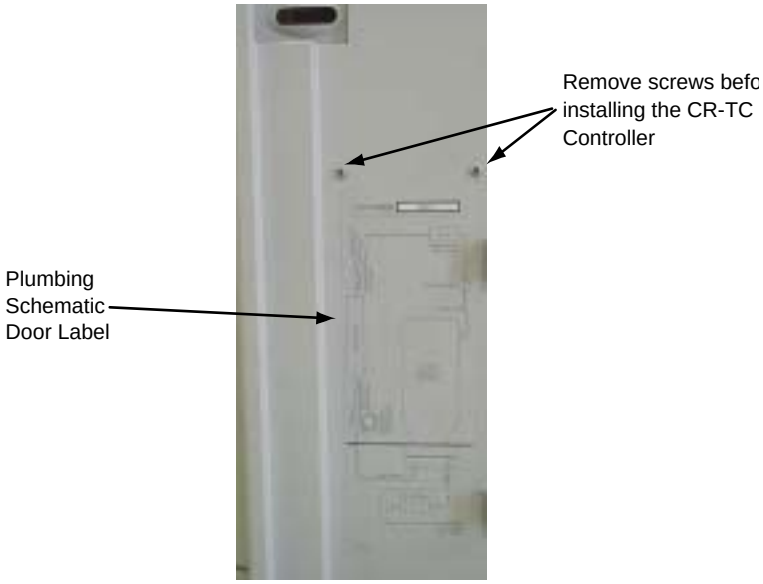


Figure 4
EG40 Inside Door Panel

B. Install the Plumbing Schematic Door Label (P/N 060599, see Figure 2, item 1) directly on top of the existing label. See Figure 5.
   1. To install the label, remove the protective film from the back of the new label,
   2. Align the bottom edges of the new label with the existing door label,
   3. Carefully affix the new label over the existing label and onto the door.

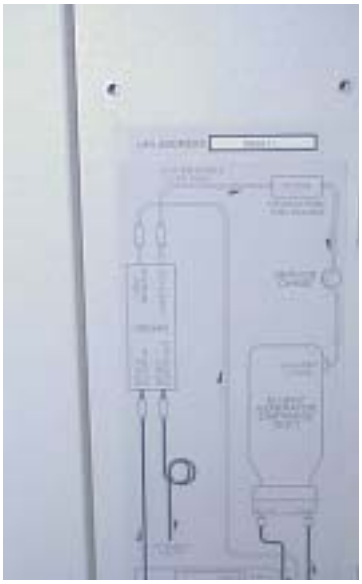


Figure 5
CR-TC Add-on Kit Door Label

C. To install the CR-TC Controller (P/N 060955, see Figure 2, item 2), orient the box upright as shown in Figure 6. Attach the CR-TC Controller box starting with the left hand screw (#1) inserted through the mounting hole below the box and tighten the screw.

Figure 6
Placement of the CR-TC Controller

D. Position a Vinyl Coated Tubing Clamp (P/N 056128, see Figure 2, item 3) at the mounting hole on the right and attach by replacing the right hand screw (#2). See Figure 7.

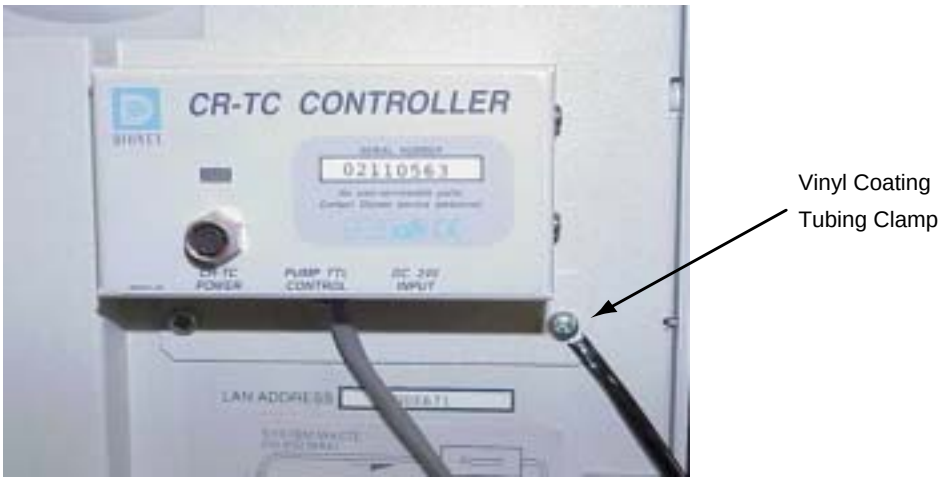


Figure 7
Placement of Upper Vinyl Coated Tubing Clamp

E. Carefully place the two Tie Wrap Mounts with Adhesive (P/N 0216091, see Figure 2, item 4) along the right edge of the new door label. Using the lower right screw on the door, attach the second Vinyl Coated Tubing Clamp (P/N 056128). These mounts and clamps will be used to hold the three cables which will extend from the CR-TC Controller Box and down the face of the door. See Figure 8

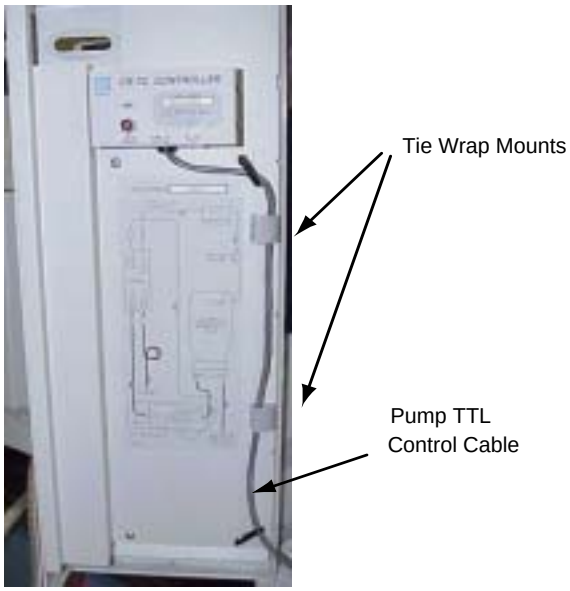


Figure 8
Door Surface Inside the EG40 with Label, the CR-TC Controller Box, 2 Cable Clamps and 2 Cable Ties Attached

F. Route the Pump TTL Control Cable down the face of the door, secured by the two Vinyl Coated Tubing Clamps and two Tie Wrap Mounts with Adhesive. See Figure 8.

2.1.2 Installing the CR-TC Power Supply

A. The CR-TC Controller will receive its power (24 volts) from the Universal Power Supply (P/N 940058, see Figure 2, item 5). With the label facing outward, mount the Universal Power Supply on the exterior side or back of the EG40 chassis using the supplied Velcro® Tape (P/N 038426). Be sure the placement of the Universal Power Supply does not interfere with opening the EG40 door. See Figure 9.

Figure 9
Universal Power Supply Attached to the Exterior of the EG40 with DC 24 V Input Cable and Pump TTL Control Cable

B. Route the DC connector cable from the Universal Power Supply through the side chase into the EG40 interior and up the door, secured by the 2 tubing clamps and 2 tie wrap mounts. See Figures 9 and 10.

Figure 10
The Power Supply DC 24 V Cable and Pump TTL Control Cable Routed through the Chase and Upward Along the Door to the Controller

C. Plug the DC connector into the mating connector (labeled **DC 24 V Input**) in the lower right of the CR-TC Controller box. See Figure 11.

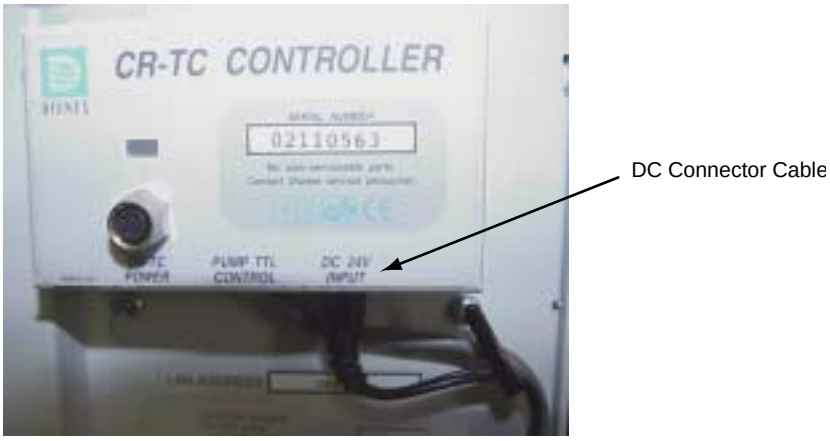


Figure 11
DC Connector Cable Attached to the CR-TC Controller Box

D. Connect the Universal Power Supply to an external AC power using a standard power cord (ordered separately).

2.1.3 CR-TC Power Extension Cable

A. Locate the CR-TC Extension Power Cable (P/N 060460, see Figure 2, item 6) in the EG40 CR-TC Add-on Kit.

B. Connect the CR-TC Extension Power Cable to the Controller Box. Tighten the fitting fingertight. See Figure 12.

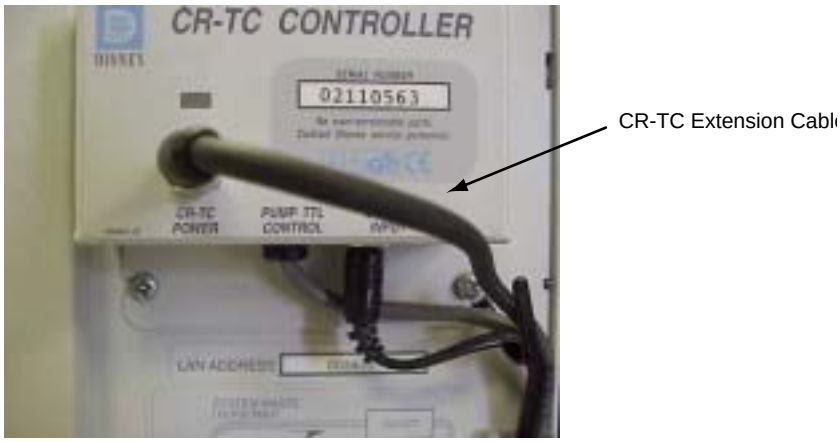


Figure 12
CR-TC Controller Box with CR-TC Extension Cable Attached

C. Route the Extension Cable through the Tubing Clamps and Tie Wrap Mounts. See Figure 13. The cable will be attached to the CR-TC later in this guide.

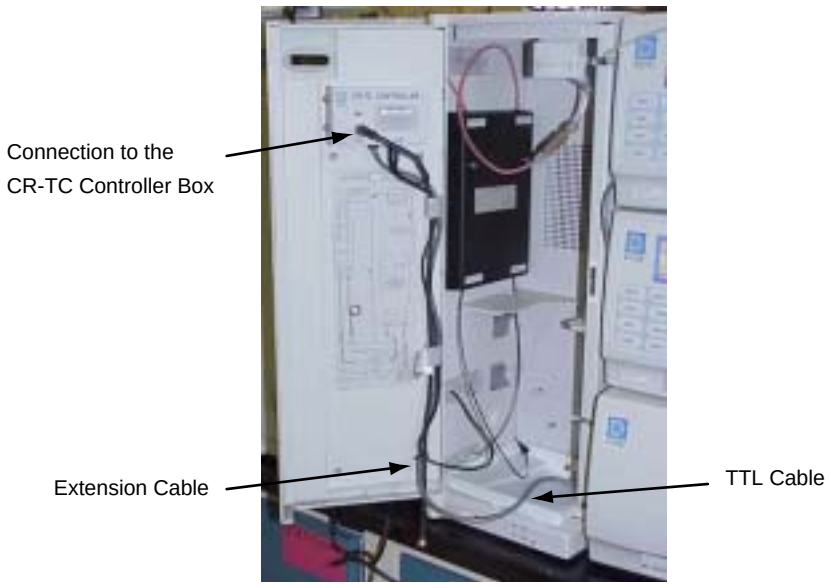


Figure 13
EG40 Door with CR-TC Extension Cable and TTL Cable Routed Down the Door

2.1.4 Connecting the Pump TTL Control

A. Route the pump TTL cable through either the left or the the right tubing chase of the EG40 chassis. See Figure 13.

B. The TTL Connector is now on the outside of the tubing chase. Connect the TTL connector to the **TTL-2** output on the Dionex GP/IP, GS/IS, or IC pump. The red wire is the positive (+) wire and the black wire is the neutral or ground (-) wire. The **TTL-2** output will be set to 0 FLOW usage in section 2.1.5. See Figure 14.

NOTE: If a SC20 or a RFC-10 module is already connected at the **TTL-2** output of the pump for 0 FLOW control, then the CR-TC TTL control cable may share the same **TTL-2** output. To accomplish this, disconnect the existing connector and remove the red and black wires. Disconnect the wires from the CR-TC TTL Control Connector. Combine by twisting the red wire with red and black with black. Reconnect the wires back into the TTL Connector and insert the connector into the **TTL-2** output on the pump.

NOTE: If another device such as an AS40 autosampler is connected to the **TTL-2** output for normal TTL operation, then disconnect the device and move it to another TTL output on the pump or the detector. **TTL-2** output on the pump is reserved for 0 FLOW control.

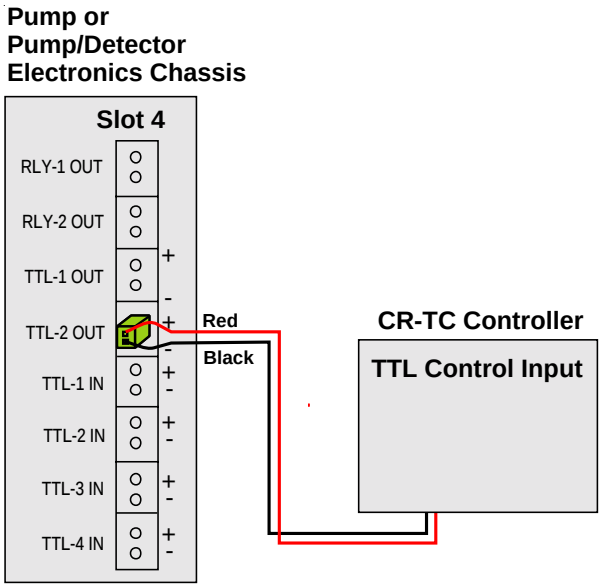


Figure 14
Inside Door of Pump and Connection to TTL-2
(Red wire on top, Black wire on bottom)

2.1.5 DX-320, DX-500, DX-600 Pump Setup for TTL Control

A. Turn on the power to the pump or combination pump/detector module. If the pump is not in the local mode then disconnect the pump from PeakNet® or Chromeleon® (6.0 or higher) Control in order to set it to Local mode. The pump may also be set to Local mode from the front panel of the pump

B. Complete the following steps to set the **TTL-2 OUTPUT USAGE** to **0 FLOW**. See Figure 15.
   1. Press menu
   2. Press Pump option
   3. Set **TTL-2 OUTPUT USAGE** to **0 FLOW**.

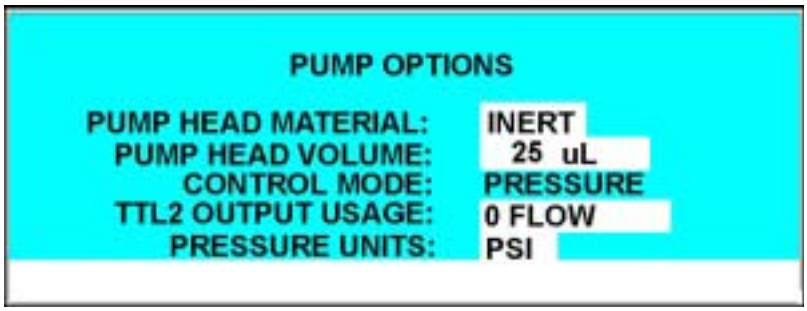


Figure 15
Setting the Zero-flow Pump Options

NOTE
Do NOT turn the pump flow on at this time.

C. Your PeakNet or Chromeleon software will automatically set the pump lower pressure limit to 200 psi. Setting the low pressure limit at 200 psi ensures that when the system pressure drops below 200 psi, the CR-TC device is powered OFF. This also protects the CR-TC device when priming. Ensure that the low pressure limit on your pump is correctly set. On the pump module, go to the DETAIL screen and ensure that the following pressure limits are set:

Low Limit = 1.38 MPa (200 psi)
High Limit = 20.6 MPa (3000 psi)

Figures 16 and 17 show example Pump Screens

NOTE
Failure to follow the above instructions could damage the CR-TC device.

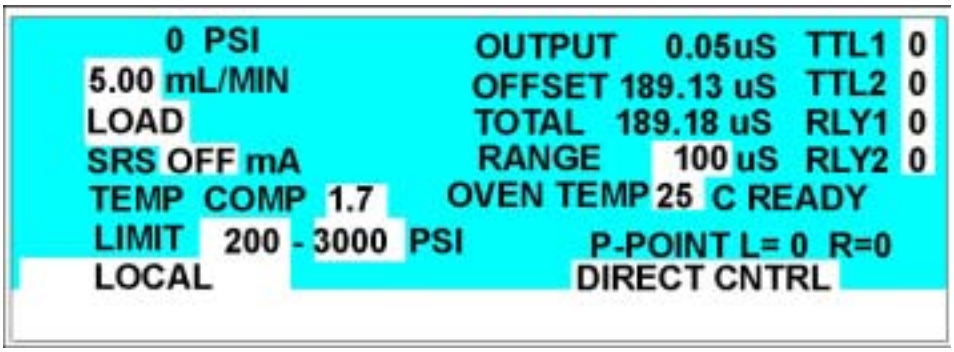


Figure 16
DX-320 Detail Screen

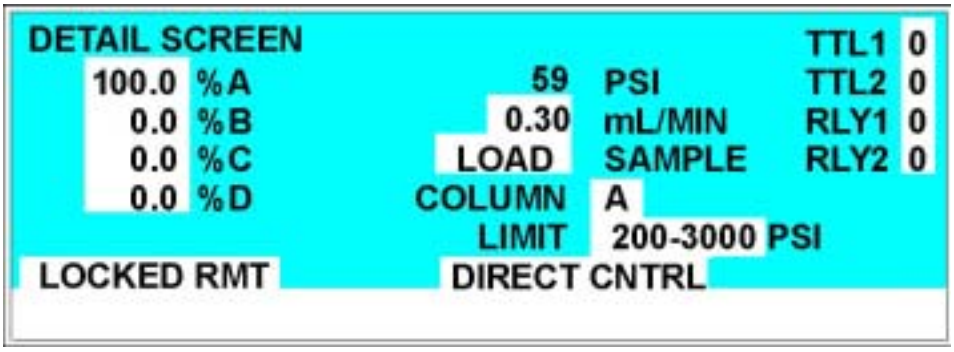


Figure 17
DX-500/DX-600 Detail Screen

2.2 Installing the CR-TC Trap Column

CAUTION
Use proper safety precautions when handling acids and bases.

2.2.1 Mounting the CR-TC Trap Column

A. To avoid spillage, remove the EGC Vent Line and plug the EGC vent hole with the plastic Vent Hole Plug supplied with the cartridge. See Figures 18 and 19.
B. Disconnect the power connector located just below the EGC Cartridge. Lift the EGC Cartridge off the shelf and turn it upright with the connectors at the top.
C. Disconnect the fittings and tubing from the EluGen Cartridge and remove the cartridge from the EG40 module. This step will open up space for the CR-TC installation.

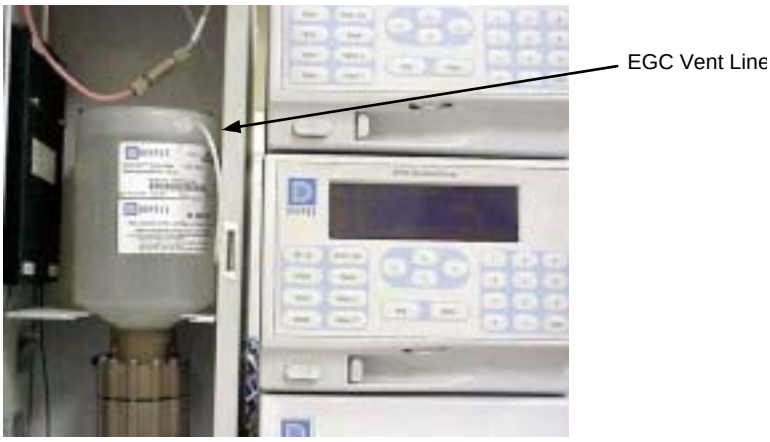


Figure 18
EGC Cartridge Installed in EG40

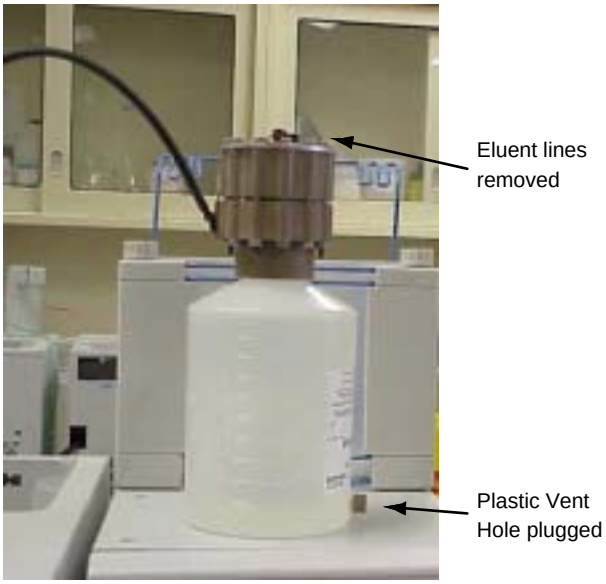


Figure 19
EG Cartridge Removed

C. If present, disconnect all trap columns (ATC or CTC) installed between the Eluent Generator and the Degas assembly and all trap columns (ATC or CTC) installed between the pump and the Eluent Generator module.

D. Install the CR-TC mounting plate in the EG40 by completely following the steps.

1. Remove the two screws holding the ATC column clip. See Figure 20.

2. Using the two flat head plate screws (P/N 045795) supplied in the EG40 CR-TC Add-on Kit, install the new CR-TC Mounting Plate (P/N 060453, see Figure 2, items 7 and 8), ensuring ball stud is in lower left corner. See Figure 21.

3. Reinstall the EGC Cartridge. Remove the vent hole plug and reattach the vent line.

4. Reattach the Power Connector to the EG40 Power Output at the lower left of the EG40.

5. Reattach the tubing line from the pump to the EGC **INLET** port on the EGC Cartridge.

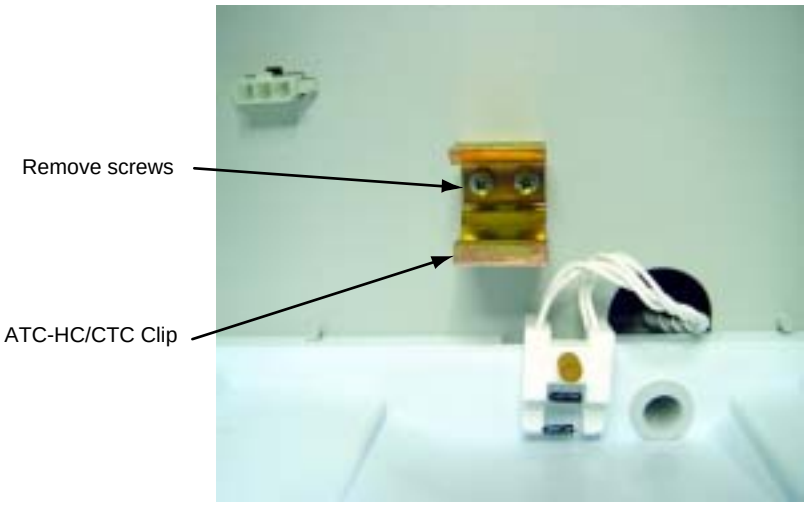


Figure 20
Existing ATC clip (remove)

Figure 21
Installed CR-TC Mounting Plate

2.2.2 Plumbing the CR-TC Trap Column

Follow Sections 2.2.2, 2.2.3 and 2.2.4 to install the CR-TC. The EG40 CR-TC Add-on Kit has tubing with color-coded labels (P/N 060625, see Figure 2, item 9) to direct you in the installation of the CR-TC in the EG40 module.

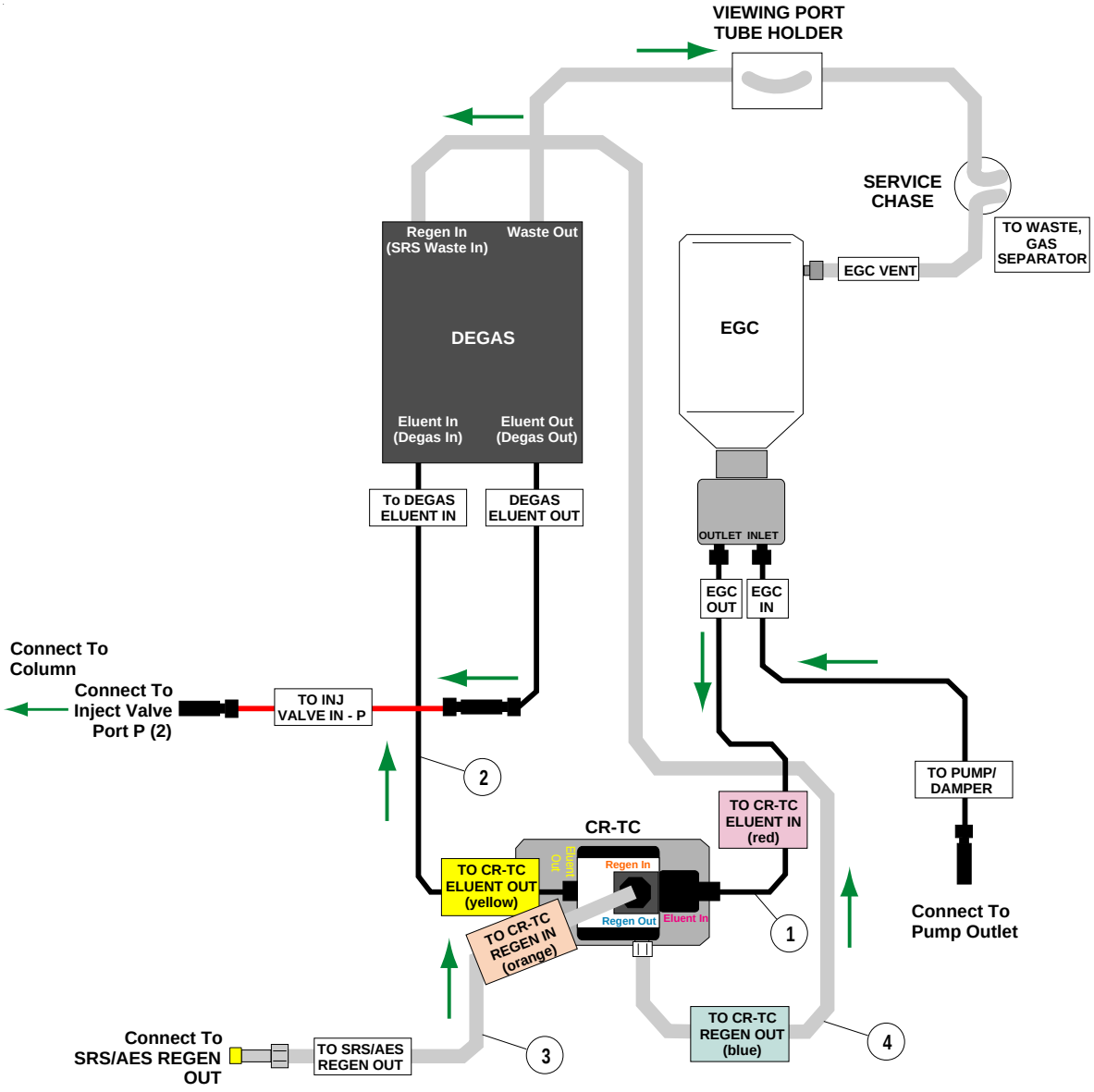


Figure 22
Plumbing Schematic for the EG40 with CR-TC

The CR-TC is installed between the EGC II KOH or EGC II MSA cartridge and the Degas Module as shown in Figure 22. Ensure that the EG40 is properly installed on the system.

A. If the EG40 and the EGC Cartridges are not installed, follow the EG40 installation instructions listed in the EG40 Product Manual (Document No. 031373).

B. Verify that the power to the pump and the suppressor (SRS/AES) are OFF before making any connections.

C. Remove the plugs from the CR-TC ports. Do not disconnect the electrode fittings (fittings with attached wires).

D. Assemble the tubing and fittings using the parts located in the EG40 CR-TC Add-on Kit (P/N 060625, see Figure 2, item 9). Figure 23 illustrates how to assemble the tubing. The numbers on Figure 22, "Plumbing Schematic for the EG40 with CR-TC," match the tubing assemblies in Figure 23.

E. All fittings should be finger tight plus 1/4 turn. Identify the tubing with the Red label in the ship kit. Connect the end with the white label **EGC OUT** to the **OUTLET** port of the EGC Cartridge. The end with the Red label **TO CR-TC ELUENT IN** is connected to the **Eluent In** port of the CR-TC. See Figure 24.

F. Connect the tubing with the Orange label (**TO CR-TC REGEN-IN**) to the CR-TC **Regen In** port.

G. Connect the tubing with the Blue label (**TO CR-TC REGEN-OUT**) to the CR-TC **Regen Out** port.

H. Connect the tubing with the Yellow label (**TO CR-TC ELUENT OUT**) to the CR-TC **Eluent Out** port.

I. The CR-TC is now ready for the hydration step. Proceed to Section 2.2.3.

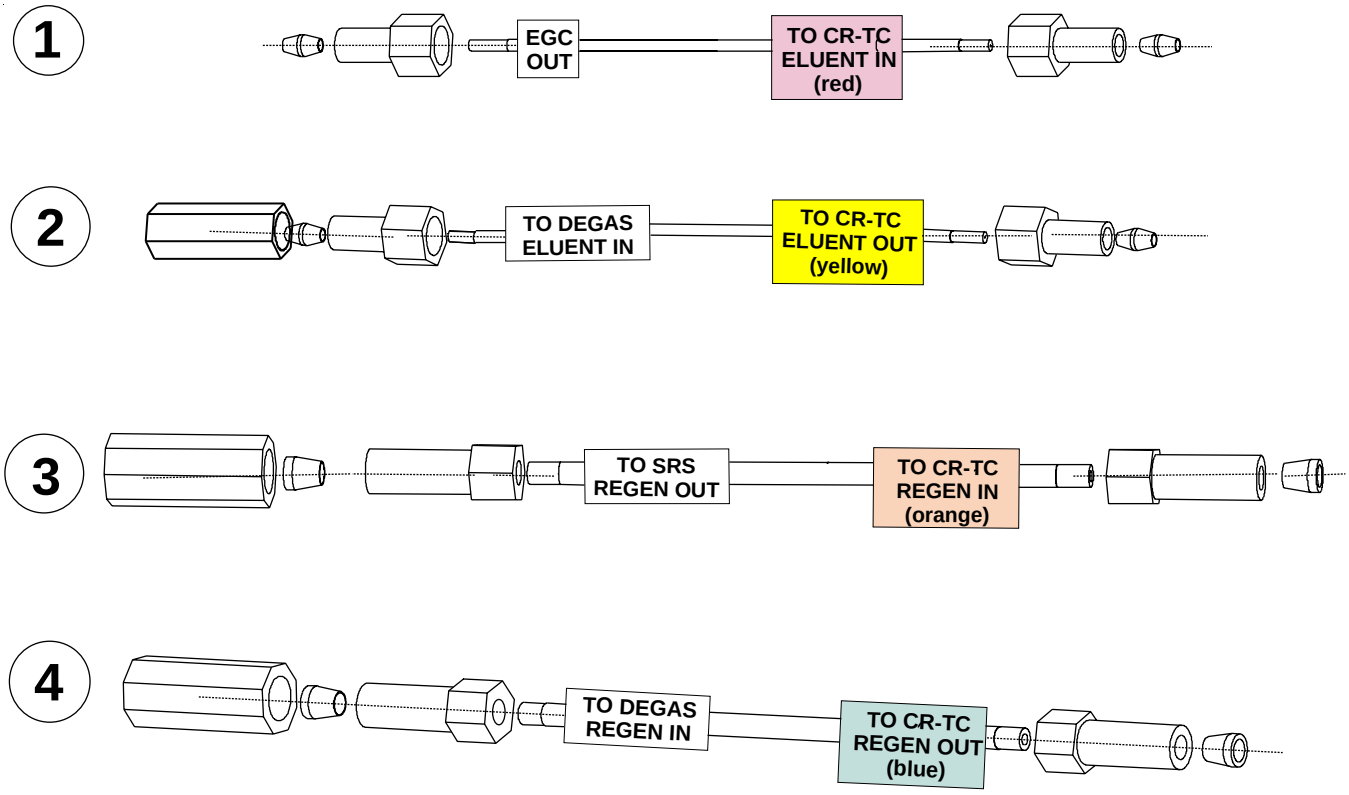


Figure 23
Tubing Assembly Diagram
(not to scale)

2.2.3 Hydrating the CR-TC Trap Column

The CR-TC should be hydrated prior to operation at first installation or after long-term storage. This process ensures that the CR-TC resin and membranes are fully hydrated and ready for operation.

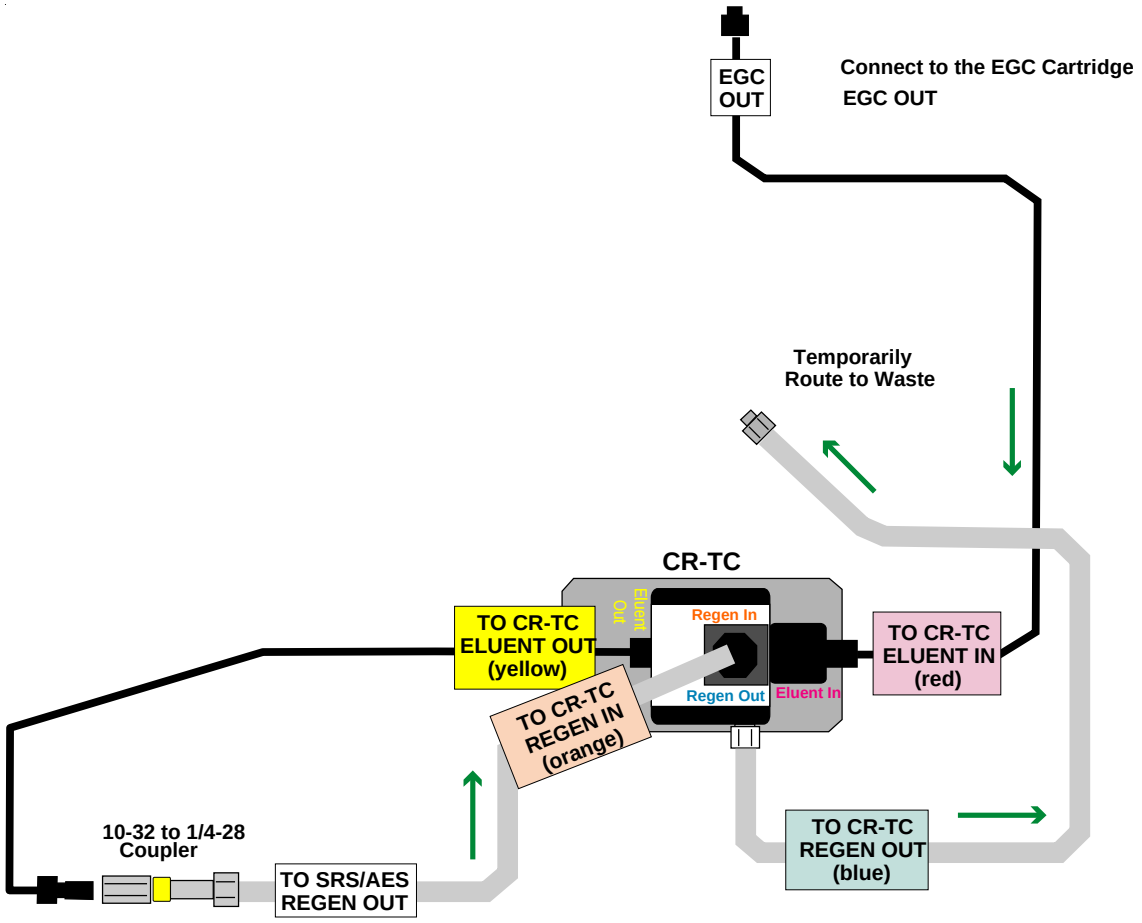


Figure 24
Connections for Hydrating the CR-TC Trap Column

A. Using a 10/32 to 1/4-28 coupler (P/N 042806) supplied with the EG40 Add-on Kit, temporarily connect the tubing between the CR-TC **Eluent Out** port and the CR-TC **Regen In** port. The line from the **Regen Out** port of the CR-TC should be diverted to waste. See Figure 24.

B. Ensure that the current to the EGC cartridge and suppressor are turned off. From the pump front panel, turn on the pump flow to hydrate the CR-TC by pumping DI water at your 4-mm, 3-mm, or 2-mm ID application flow rate for at least 10 minutes.

C. After the above hydration step, disconnect the coupler and complete the CR-TC installation by following the steps in Section 2.2.4.

2.2.4 Connecting the CR-TC Trap Column

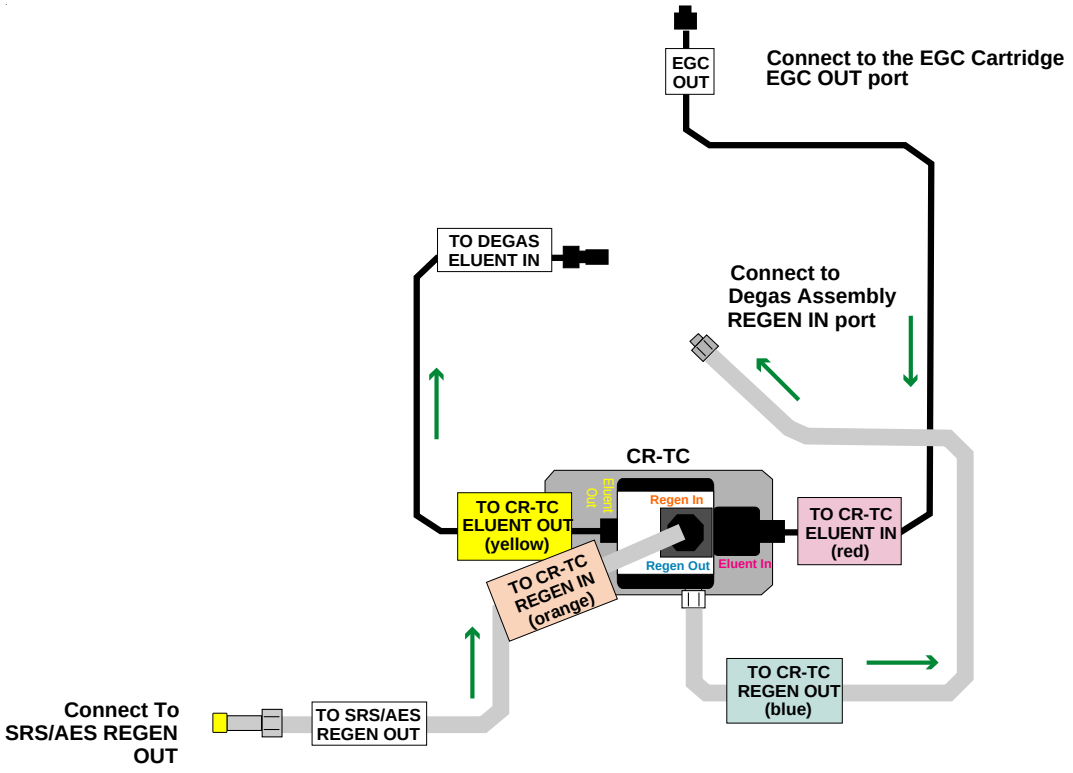


Figure 25
Connecting the CR-TC Trap Column

A. Verify that the tubing with the Red label **(TO CR-TC ELUENT IN)** is connected to the **Eluent In** port of the CR-TC. See Figure 25.

B. Verify that the other end of this tubing with the White label **(EGC OUT)** is connected to the **OUTLET** port of the EGC Cartridge. See Figure 25.

C. Verify that the tubing with the Yellow label **(TO CR-TC ELUENT OUT**) is connected to the CR-TC **Eluent Out** port. See Figure 25.

D. Connect other end of this tubing with the White label **(TO DEGAS ELUENT IN)** to the **ELUENT IN** port on the EG40 Degas Assembly. (Note that this port may be labeled **DEGAS IN** on older EG40 Degas Assemblies.) See Figure 25.

E. Verify that the tubing with the Orange label **(TO CR-TC REGEN-IN)** is connected to the CR-TC **Regen In** port. See Figure 25.

F. Connect the other end of this tubing with the White label **(TO SRS/AES, REGEN OUT)** to the SRS or AES **REGEN OUT** port. See Figure 25.

G. Verify that the tubing with the Blue label **(TO CR-TC REGEN-OUT)** is connected to the CR-TC **Regen Out** port. See Figure 25.

H. Connect the other end of this tubing with the White label **(TO DEGAS REGEN IN)** to the **REGEN IN** port of the degas assembly. (This degas port may be labeled **SRS WASTE IN** on older EG40 Degas Assemblies.) See Figure 25.

I. The CR-TC is mounted on to the mounting plate by aligning the hole on the CR-TC back plate with the ball stud on the mounting plate and pushing the CR-TC firmly onto the mounting ball stud. The CR-TC will click into place when properly installed. See Figure 26.

Figure 26
Detail of EG40 with CR-TC

2.3 Back Pressure Tubing

Check the total system backpressure and adjust if necessary by changing the restrictor tubing after the EG40 Degas Assembly. Refer to the EG40 manual if required. The total system pressure (with the EG40, restrictor, column, suppressor and cell) should be between 2000-3000 psi for optimal operation. For most applications, a system pressure of about 2300 psi is recommended.

Use 0.003" ID PEEK tubing to adjust the system pressure and install between the Degas Assembly **DEGAS OUT** (**ELUENT OUT**) port and the injection valve.

2.4 Power Connection

Connect the power cable on the CR-TC Trap Column to the extension cable from the CR-TC Controller. Ensure that the Power Supply is **ON**. When the LED on the CR-TC Controller is lit, the power to the CR-TC is on. See Figure 26.

2.5 Test Connections

Turn on the IC system, the EG40 module to the set current, and the suppressor to the set current and allow the system to equilibrate with eluent prior to starting your analysis.

NOTE
The LED on the CR-TC power supply should be lit when the pump flow is turned on.

2.6 Completed Installation

Figure 27 illustrates the completed installation of the EG40 Add-on Kit.

Figure 27
EG40 with CR-TC

SECTION 3 - OPERATION

3.1 Operating Pressure Limitations

The recommended maximum operating pressure for the CR-TC in conjunction with the EG40 module is 3000 psi (21 MPa). This pressure limit protects the degas tubing assembly in the EG40 from mechanical failure. Due to the high column backpressure, do not operate the CR-ATC in conjunction with the EG40 module using any of the following columns: IonPac AS5A, IonPac AS10, OmniPac PAX-100 or OmniPac PAX-500 unless the flow rate has been reduced to lower the system pressure to less than 3000 psi (21 MPa). Excessive backpressure may cause the degas tubing assembly in the EG40 to rupture.

3.2 Solvent Use

A. Due to the high backpressure, do not use solvents when operating the CR-ATC and EG40 module with the following columns: the IonPac AS11-HC or CarboPac PA10. Excessive backpressure may cause the degas tubing assembly in the EG40 to rupture.

B. Solvents may be used if the flow rate is reduced to achieve a system backpressure of less than 3000 psi.

C. Do not operate the CR-ATC in conjunction with the EGC-KOH cartridge with solvents other than methanol (maximum 25%) for anion separations.

D. Solvents should not be used with the EGC-MSA cartridge or CR-CTC Trap Column.

3.3 Ventilation

To prevent the buildup of hydrogen and oxygen gases, install the CR-TC/EG40 module in a well ventilated site.

3.4 Background and Drift

1. A system functioning correctly with equilibrated consumables (pump/EG40/CR-TC/column/suppressor), the expected background for most EG40 applications (up to 50 mM KOH) is < 1 µS/cm. For higher eluent strengths, the background may be slightly higher. Note the background may be higher at start-up with new consumables (EGC cartridge, suppressor, columns).

2. The expected baseline drift values using the EGC-KOH cartridge and CR-ATC are shown below:

AS11 standard gradient (0.5 - 38.3 mM KOH)	< 100 nS/cm per run
AS15 standard gradient (1- 50 mM KOH)	< 140 nS/cm per run

3. The expected baseline drift values using the EGC-MSA cartridge and CR-CTC are shown below:

CS12A standard gradient (11 - 57 mM MSA)	< 100 nS/cm per run
CS17 standard gradient (1 - 50 mM MSA)	< 50 nS/cm per run

3.5 Carbohydrate Applications

The EG40 with CR-ATC installed may be used for carbohydrate applications. See the EG40 Product Manual (Document No. 031373) for installation requirements for carbohydrate applications.

SECTION 4 - TROUBLESHOOTING

4.1 LED Light is OFF on the CR-TC Controller

NOTE

If the 0 FLOW setting is selected, the pump activates the TTL-2 output when the pump flow is ON. This enables the CR-TC Controller box output and the Controller Box LED will turn on. When the pump flow is OFF (0 flow), the pump turns off the TTL-2 output and the CR-TC Controller output is disabled (LED is off).

A. Ensure that the TTL connector is plugged in and is configured correctly. Refer to TTL control in Equipment Requirements, Section 2.1.4.

B. Ensure that the power-supply is ON and the pump is ON.

C. If A and B are true then the problem may be associated with the CR-TC Controller or with the Pump TTL output.

1. The pump TTL output can be checked with a voltmeter across the TTL pins. When the TTL is on, the voltage output should be 0 V. When the TTL is off, the voltage should be +5 V.

2. If in the voltmeter test (step 1) the TTL output is functional, then the CR-TC controller must be replaced.

4.2 Unstable Pressure or High Noise

Unstable pressure can cause high baseline drift and noise.

4.2.1 Unstable Pressure

A. Ensure that the pump is properly primed.

B. Disconnect the tubing to ensure that there are no trapped bubbles and reconnect the tubing.

C. Check the system pressure. If the total system pressure is < 2000 psi, add sufficient backpressure, preferably using 0.003" ID tubing between the degas assembly and the injection valve and ensure that the total system pressure is between 2000 – 3000 psi.

4.2.2 High Noise

A. Ensure that the system pressure is stable. If the system pressure is unstable refer to previous Section 4.2.1.

B. If system pressure is stable and the total system pressure is < 2000 psi, add sufficient backpressure, preferably 0.003" ID tubing between the degas assembly and injection valve and ensure that the total system pressure is now between 2000 – 3000 psi.

4.3 High Background and Drift

A. Check if the CR-TC unit is powered on.

B. If the CR-TC was operated without any power and with eluent flowing, the capacity of the device is depleted. Under these conditions follow the cleanup procedure outlined in Section 5.

C. Check the backpressure to the SRS or AES suppressor and ensure that it is approximately 40 psi.

D. Check the system backpressure.

1. If the total system pressure has decreased to a lower value after installing the CR-TC, bypass the CR-TC eluent channel by coupling the **TO CR-TC ELUENT IN** (red) line to **TO CR-TC ELUENT OUT** (yellow) line and check the backpressure.

2. If the system pressure is lower (without the CR-TC) than before (with the CR-TC), examine individual components of the system (including pump and consumables) and ensure that they are working correctly and each component adds the correct backpressure.

3. If the system pressure is higher (without the CR-TC) than before (with the CR-TC), this suggests that the CR-TC has an internal leak. Verify the pressure drop by reconnecting the CR-TC eluent channel. If the pressure is lower, then the CR-TC must be replaced.

4.4 Leakage

A. Always operate with the system backpressure between 2000 – 3000 psi. Lower the backpressure if the system pressure exceeds 3000 psi. Check the pressure restrictor after the Degas module.

B. If leakage is observed at CR-TC electrode connections (fittings where the electrode cover connects), do not tighten the fittings. Replace the CR-TC unit.

C. If the tubing pops from a fitting during high pressure operation, the tubing may be deformed. The fitting should be removed. Cut new tubing with a tubing cutting tool (P/N 049584). Remake the fitting. All fittings should be finger tight plus 1/4 turn.

4.5 Lower System Pressure

If the total system pressure is changed to a lower value after the CR-TC was installed. Bypass the CR-TC eluent channel by coupling the **TO CR-TC ELUENT IN** (Red) line to **TO CR-TC ELUENT OUT** (Yellow) line and check the backpressure.

A. If the system pressure is lower (without the CR-TC) than before (with the CR-TC) examine individual components of the system (including pump and consumables) and ensure that they are working correctly.

B. If the system pressure is higher (without the CR-TC) than before (with the CR-TC), this suggests that the CR-TC has an internal leak. Verify the pressure drop by reconnecting the CR-TC eluent channel. If the total system pressure is lower then replace the CR-TC unit.

4.6 High Pressure CR-TC (Eluent Channel)

If the CR-TC develops a pressure > 100 psi in the eluent channel, the column inlet bed support of the CR-TC may need to be replaced. To change the inlet bed support assembly, refer to the following instructions, using one of the two spare inlet bed support assemblies included in the Ship Kit. Be sure to filter DI water used for eluents before use to eliminate the DI water as a source of particulates.

A. Disconnect the CR-TC column from the system.

B. Using two open end wrenches, carefully unscrew the inlet (top) column fitting.

C. Turn the end fitting over and tap it against a benchtop or other hard, flat surface to remove the bed support and seal assembly. If the bed support must be pried out of the end fitting, use a sharp pointed object such as a pair of tweezers, but be careful that you **DO NOT SCRATCH THE WALLS OF THE END FITTING.** Discard the old bed support assembly.

D. Place a new bed support assembly into the end fitting. Make sure that the end of the column tube is clean and free of

any particulate matter so that it will properly seal against the bed support assembly. Use the end of the column to carefully start the bed support assembly into the end fitting.

Part	(P/N)
CR-ATC	060477
CR-CTC	060478
Bed Support Assembly	042955
End Fitting	052809

CAUTION

If the column tube end is not clean when inserted into the end fitting, particulate matter may obstruct a proper seal between the end of the column tube and the bed support assembly. If this is the case, additional tightening may not seal the column but instead damage the column tube or the end fitting.

E. Screw the end fitting back onto the column. Tighten it fingertight, then an additional 1/4 turn (25 in-lb). Tighten an additional 1/4 turn further only if leaks are observed. If a leak still is observed, remove the end fitting and reclean the sealing surfaces.

F. Reconnect the column to the system and resume operation.

CAUTION

Do NOT replace the CR-TC Eluent Out outlet bed support in the CR-TC Eluent Out port.

4.7 High Pressure CR-TC (Regen Channel)

If the CR-TC develops a pressure > 20 psi in the regen channel due to particulate matter, then

A. Fill a 5 mL syringe with DI water and push 5 mL of DI water into the CR-TC **Regen Out** port. If liquid flows out of the **Regen In** port, then the particle has been dislodged.

B. Reverse the flow by pushing 5 mL of DI water from the **Regen In** port to the **Regen Out** port.

C. If liquid does not flow out of the Regen ports in step A or B, the CR-TC Trap Column must be replaced.

4.8 Blockage Between Suppressor and CR-TC

If no gas bubble stream is observed out of the SRS/AES suppressor when the CR-TC is installed and powered,

A. Check for leaks.

B. The CR-TC Regen flow may be blocked, troubleshoot following the steps in Section 4.7.

C. Check whether the EG Degas Assembly has developed high pressure in the **REGEN IN** (**SRS WASTE IN**) or **WASTE OUT** channel.

D. Check if the SRS/AES has developed high pressure in the regenerant channel. Refer to appropriate suppressor Product Manual.

Always remember that assistance is available for any problem that may be encountered during the shipment or operation of DIONEX instrumentation and consumables through the DIONEX North America Technical Call Center at 1-800-DIONEX-0 (1-800-346-6390) or through any of the DIONEX Offices listed in, "DIONEX Worldwide Offices" on the Dionex Reference Library CD-ROM.

SECTION 5 - CLEAN UP

NOTE

Do not use the analytical pump for the following cleanup operation since exposure to high concentration of acid or base may cause damage to the pump.

5.1 CR-ATC Cleanup

The CR-ATC for normal day-to-day operation does not require a cleanup. However if the CR-ATC is exposed accidentally to high levels of anionic contaminants or is converted from the OH^- form to other anionic forms such as carbonate then the device requires a cleanup using 2.0 M NaOH.

A. Disconnect all the lines to the CR-ATC.

B. Connect a line from the **Eluent In** port to the **Regen In** port on the CR-ATC. Direct the **Regen Out** port to waste.

C. Prepare a fresh solution of 2.0 M NaOH from a 50% w/w NaOH solution (available from Fisher Scientific Catalogue No. SS254) with at least the following purity specifications: iron < 5 ppm, Chloride < 0.005%; and sodium carbonate $\leq$ 0.1%.

D. Use the Trap Column / Suppressor Clean-up Kit (P/N 059659) to deliver 100 mL of 2.0 M NaOH solution through the **Eluent Out** port of the CR-ATC column.

E. Rinse the CR-ATC unit with 10 mL DI water before plumbing it back into the system.

5.2 CR-CTC Cleanup

The CR-CTC for normal day-to-day operation does not require a cleanup. However if the CR-CTC is exposed accidentally to high levels of cationic contaminants or is converted from the H^+ form to other cationic forms such as ammonium, then the device requires a cleanup using 1.0 M methanesulfonic acid (MSA).

A. Disconnect all the lines to the CR-CTC.

B. Connect a line from the **Eluent In** port to the **Regen In** port on the CR-CTC. Direct the **Regen Out** port to waste.

C. Prepare a fresh solution of 1.0 M MSA from a concentrated MSA solution.

D. Use the Trap Column / Suppressor Clean-up Kit (P/N 059659) to deliver 100 mL of 1.0 M MSA solution through the **Eluent Out** port of the CR-CTC column.

E. Rinse the CR-CTC unit with 10 mL of DI water before plumbing it back into the system.

APPENDIX A - SPECIFICATIONS

A.1 Mechanical

CR-TC Controller	3-7/16 in W x 3.0 in H x 1-1/2 in D
Universal Power Supply	3-9/16 in W x 1-7/16 in H x 1-7/16 in D

A.2 Electrical

AC Power Supply	
Input Voltage	100 - 240 VAC, 47-63 Hz, 0.4 A
Output Voltage	+24 V DC, 0.62 A
Typical CR-TC Load	+24 V DC, 0.10 A