R E F E R E N C E G U I D E

3000 Micro GC

Gas Analyzer

PN 074-558-P1A

DETECT TO PROTECT™

INFICON

R E F E R E N C E G U I D E

3000 Micro GC

Gas Analyzer

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Purpose of this Reference Guide

3000 Micro GC Guides are not intended to replace the 3000 Micro GC Operating Manual (PN 074-519-P1) or 3000 Micro GC training, but are intended for use as supporting materials for those who have been trained in an INFICON® sanctioned training course.

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Definition of Note, Hint, Danger, Warning and Caution Paragraphs

NOTE: These messages contain pertinent information that is useful for achieving maximum 3000 Micro GC efficiency.

HINT: These messages provide insight into product usage.

DANGER

Failure to heed these messages may result in serious personal injury or death!

WARNING

Failure to heed these messages could result in personal injury.

WARNING - Risk Of Electric Shock

Dangerous voltages are present. Failure to heed these messages could result in personal injury.

CAUTION

Failure to heed these messages could result in damage to 3000 Micro GC.

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How To Contact Customer Support

Worldwide support information regarding:

- Technical Support, to contact an applications engineer with questions regarding INFICON products and applications,
  or
- Sales and Customer Service, to contact an INFICON Sales office,

  or
- Repair Service, to contact an INFICON Service Center, is available at www.inficon.com.

If experiencing an instrument problem, please have the following information readily available:

- the instrument serial number,
- a description of the problem,
- an explanation of any corrective action that may have already been attempted,
- and the exact wording of any error messages observed.

To contact Customer Support, see Support at www.inficon.com.

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3000 Micro GC Guide 1
Configuring a PC for a Direct Connection to 3000 Micro GC via the Crossover Cable

Table 1-1 Configuring a PC for a direct connection via the crossover cable

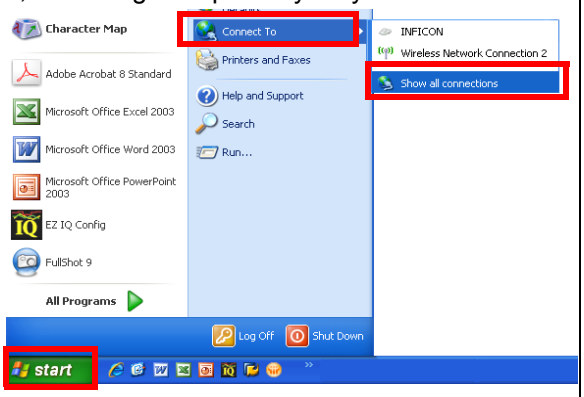
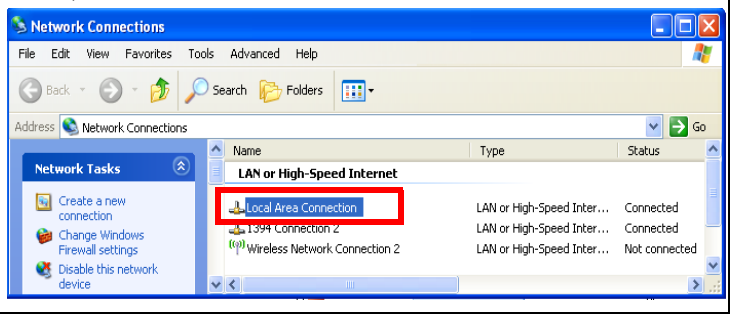
Step	Description
1	Connect one end of the crossover cable (PN 5183-4649 provided in the ship kit) to a TCP/IP ethernet port on the PC. Connect the other end to the ethernet port on the back of 3000 Micro GC.
2	Turn the 3000 Micro GC power switch, located on its front, to the on position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load.
3	Click (Windows) **Start >> Connect to >> Show All Connections**. **NOTE:** Depending on the version of Windows, this navigation path my vary. 
4	On the **Network Connections** window, double-click **Local Area Connection**. 

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Table 1-1 Configuring a PC for a direct connection via the crossover cable (continued)

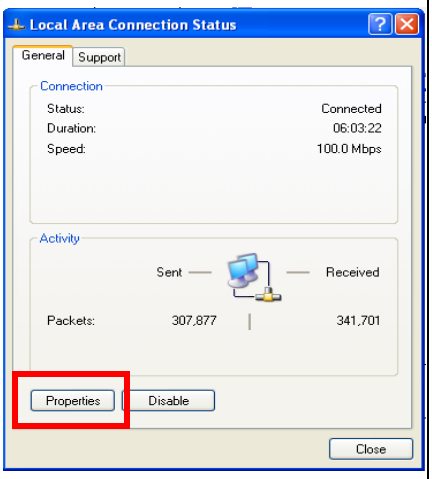
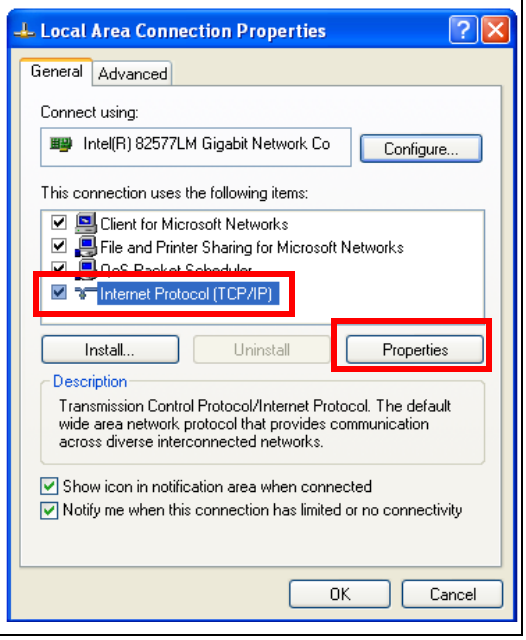
Step	Description
5	In the **Local Area Connection Status** window, click **Properties**. 
6	In the **Local Area Connection Properties** window in **The connection uses the following items:** area, select **Internet Protocol (TCP/IP)**, then click **Properties**. 

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Table 1-1 Configuring a PC for a direct connection via the crossover cable (continued)

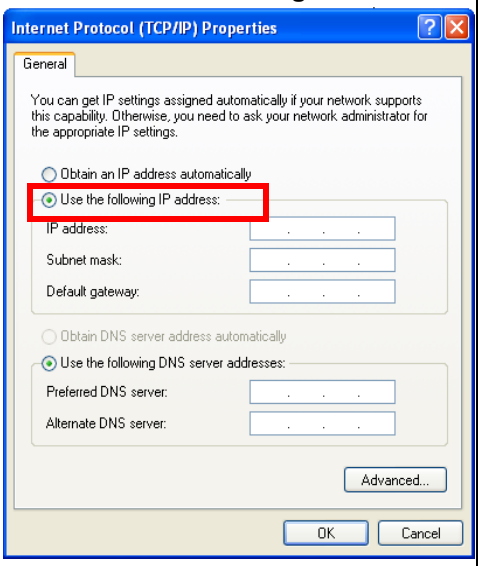
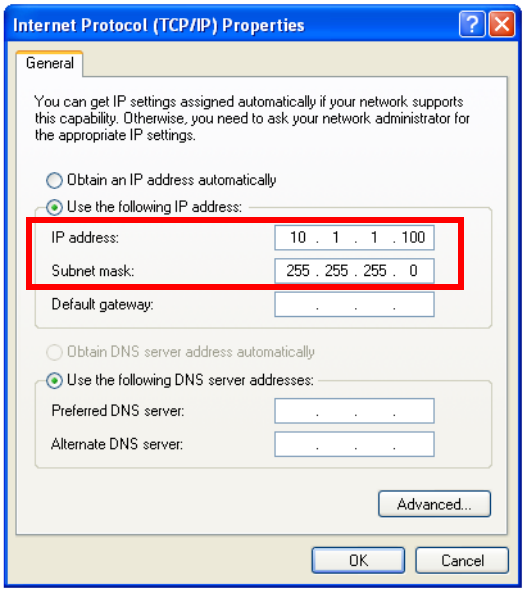
Step	Description
7	In the **Internet Protocol (TCP/IP) Properties** window, select **Use the following IP address**. 
8	Type the PC **IP address** and **Subnet mask** as follows: **IP address: 10.1.1.100** **Subnet mask: 255.255.255.0** **Default gateway**: * * The **Default gateway** can remain blank for a direct connection via the crossover cable. 
9	Click **OK** to exit the **Internet Protocol (TCP/IP) Properties** window.
10	Click **OK** to exit the **Local Area Connection Properties** window.
11	Click **Close** to exit the **Local Area Connection Status** window.

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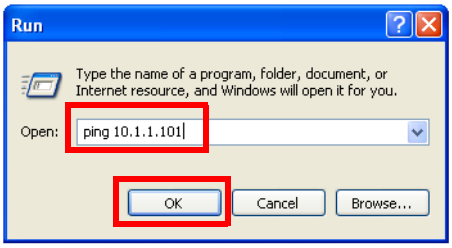
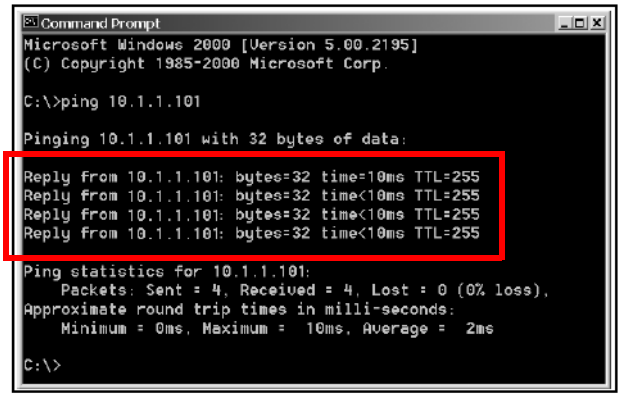
Table 1-1 Configuring a PC for a direct connection via the crossover cable (continued)

Step	Description
12	Click (Windows) **Start >> Run**. 
13	In the **Run** window, in the **Open:** box, type **ping 10.1.1.101**. Click **OK**. 
14	Verify from the **Command Prompt** that the PC is receiving data packets from the instrument. **NOTE:** If the command prompt reads **Request Timed Out** or **Detection Limit Unreachable**, repeat steps 3 to 7 to verify IP settings. Verify that 3000 Micro GC is turned on and connected to the PC via the crossover cable. If there is still no communication contact INFICON. 

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3000 Micro GC Guide 2 Connecting to 3000 Micro GC via the Static IP Address

Table 2-1 Connecting to the instrument via the static IP address

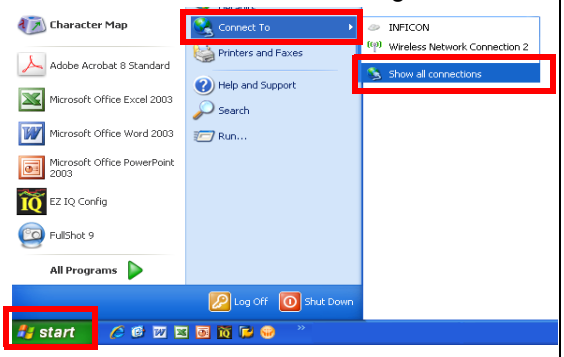
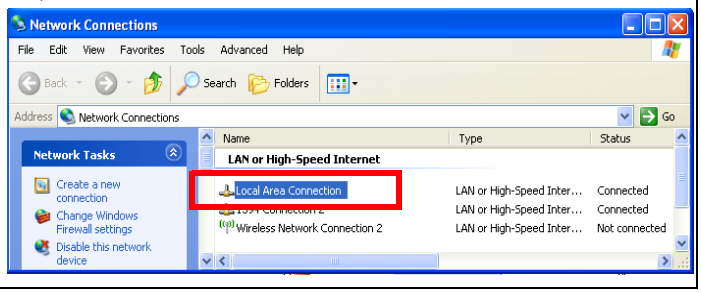
Step	Description
1	3000 Micro GC has both a static IP address and a dynamic IP address. The factory default dynamic IP address is set at **10.1.1.101**. In the event that the IP address is modified or lost, it is possible to access the instrument through its static IP address: **192.168.1.99**. **NOTE:** It is necessary to access the IP address via a direct crossover cable, in order to avoid potential routing issue in a local area network (LAN).
2	Connect one end of the crossover cable (PN 5183-4649 provided in the ship kit) to a TCP/IP ethernet port on the PC. Connect the other end to the ethernet port on the back of 3000 Micro GC.
3	The 3000 Micro GC power switch is located on its front panel. Turn the switch to the on position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load.
4	Click (Windows) **Start >> Connect to >> Show All Connections**. **NOTE:** Navigation path my vary, depending on what version Windows is running. 
5	On the **Network Connections** window, double-click **Local Area Connection**. 

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Table 2-1 Connecting to the instrument via the static IP address (continued)

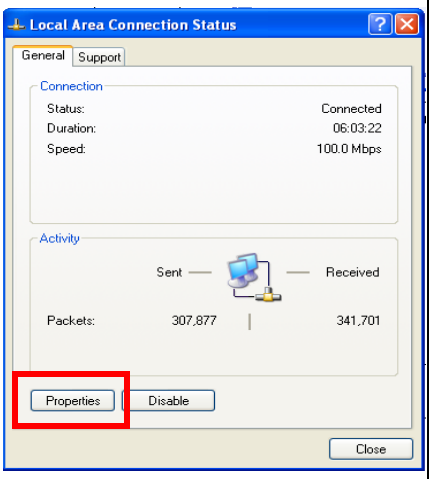
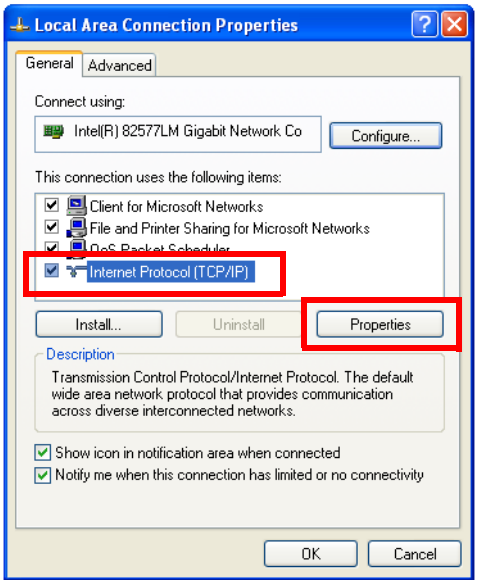
Step	Description
6	In the **Local Area Connection Status** window, click **Properties**. 
7	The **Local Area Connection Properties** window will display. Select **Internet Protocol (TCP/IP)** in **The connection uses the following items:** area, then click **Properties**.. 

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Table 2-1 Connecting to the instrument via the static IP address (continued)

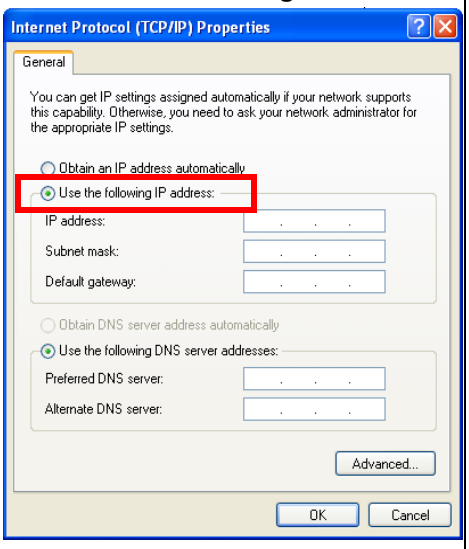
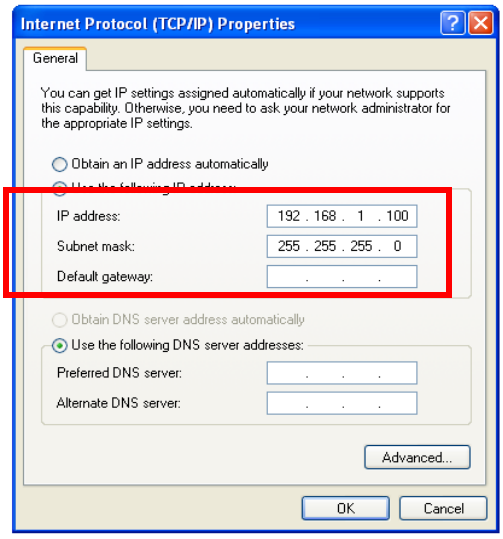
Step	Description
8	In the **Internet Protocol (TCP/IP) Properties** window, select **Use the following IP address**. 
9	Type the PC **IP Address** and **Subnet Mask** as follows: **IP Address: 192.168.1.100** **Subnet Mask: 255.255.255.0** **Default gateway: *** * The **Default gateway** can remain blank for a direct connection via the crossover cable. 
10	Click **OK** to exit the **Internet Protocol (TCP/IP) Properties** window.
11	Click **OK** to exit the **Local Area Connection Properties** window.
12	Click **Close** to exit the **Local Area Connection Status** window.

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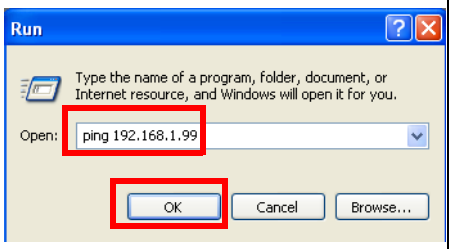
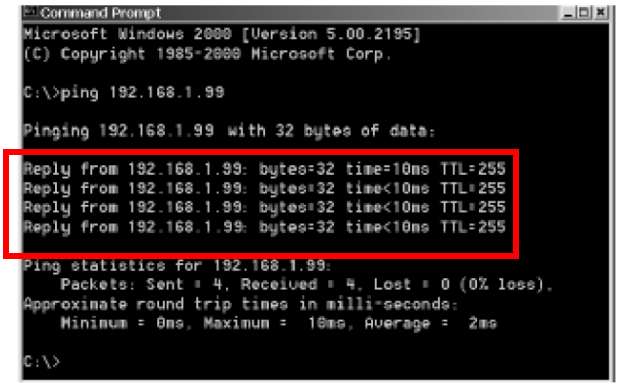
Table 2-1 Connecting to the instrument via the static IP address (continued)

Step	Description
13	Click (Windows) **Start >> Run**. 
14	In the **Run** window, in the **Open:** box, type **ping 192.168.1.99**. Click **OK**. 
15	Verify from the **Command Prompt** that the PC is receiving data packets from the instrument. **NOTE:** If the command prompt reads **Request Timed Out** or **Detection Limit Unreachable**, repeat steps 3 to 7 to verify IP settings. Verify that 3000 Micro GC is on connected to the PC via the crossover cable. If there is still no communication contact INFICON. 
16	Open a web browser, such as Internet Explorer.
17	In the address bar, type **192.168.1.99** and press **Enter**.
18	The instrument embedded web page will display. Select the **IP Configuration** tab. Review the IP address.

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3000 Micro GC Guide 3
Changing the Instrument IP Address

Table 3-1 Changing the Instrument IP Address

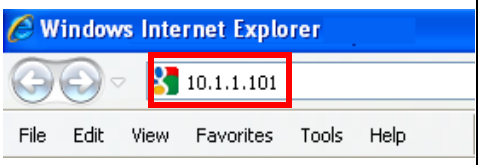
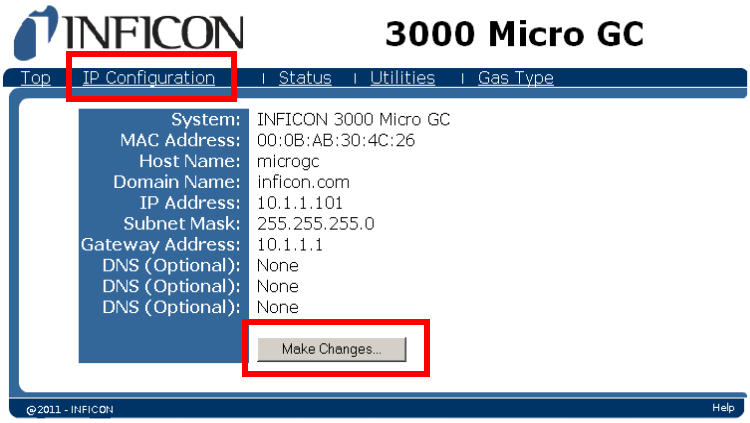
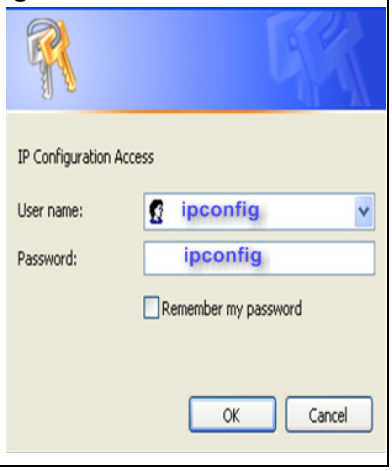
Step	Description
1	The IP address of the instrument can be changed through the embedded web page. **NOTE:** Consult an IT professional to assist with IP settings.
2	Open a web browser, such as Internet Explorer.
3	In the address bar, type the current IP Address of the instrument. Press **Enter**. **NOTE:** The factory default IP address is set at **10.1.1.101**. 
4	The instrument's embedded web page will display. Click the **IP Configuration** tab. The current IP address for the instrument is displayed. Click **Make Changes**. 
5	When prompted for a **User name** and **Password**, type **ipconfig** for both. Click **OK.** 

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Table 3-1 Changing the Instrument IP Address (continued)

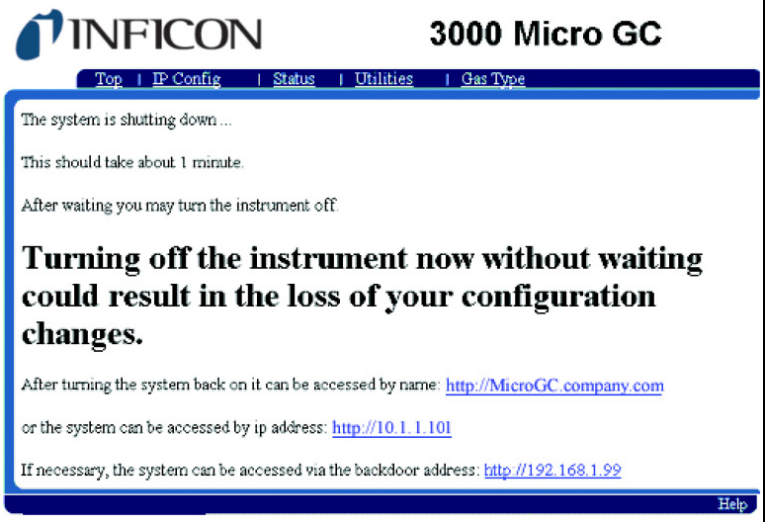
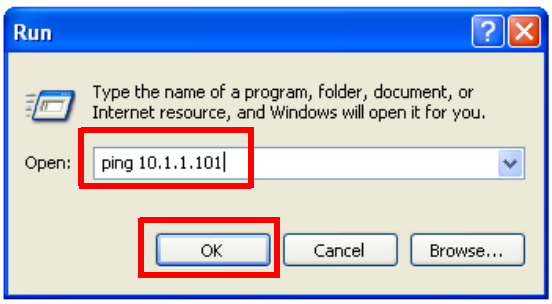
Step	Description
6	Type the desired changes to the IP address and click **Submit.** **NOTE:** Consult an IT professional to assist with IP settings.
7	A window will prompt the user to restart the instrument: Click **Restart**. *Allow three minutes for the instrument to update configuration files.* **CAUTION** **Do not turn off the power without waiting three minutes. 3000 Micro GC must update configuration files before power is turned off. If power is turned off too soon, the files could be corrupted and render 3000 Micro GC unusable.** 
8	Connect to the instrument using the new IP address. Click (Windows) **Start >> Run**. 
9	In the **Run** window, in the **Open:** box, type the new IP address. Click **OK**. 

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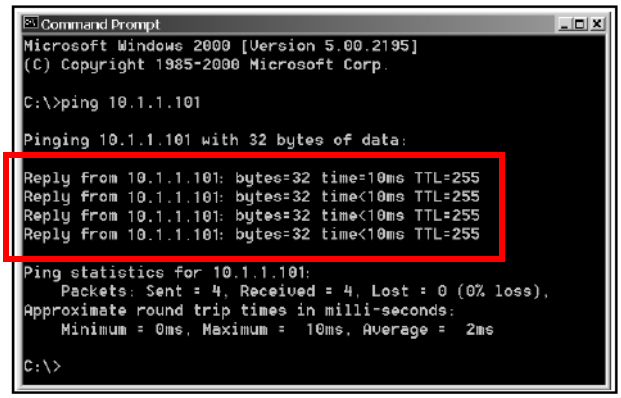
Table 3-1 Changing the Instrument IP Address (continued)

Step	Description
10	Verify from the **Command Prompt** window that the PC is receiving data packets from the instrument. **NOTE:** If the ping command prompt displays Request Timed Out or Detection Limit Unreachable, then connect to the static IP address (192.168.1.99) by following the procedure in 3000 Micro GC Guide 2, Connecting to 3000 Micro GC via the Static IP Address. If connecting to the static IP address of the instrument is unsuccessful, contact the network administrator to check whether there is a conflict of the newly assigned IP address or any possible network issue between the instrument and the PC. Once the network issue is resolved, perform steps in this section again to configure the instrument to the new IP address. If connecting to the static IP address is unsuccessful, contact INFICON. 

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3000 Micro GC Guide 4
Changing the Carrier Gas Configuration

Table 4-1 Changing the carrier gas configuration

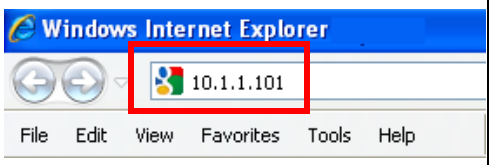
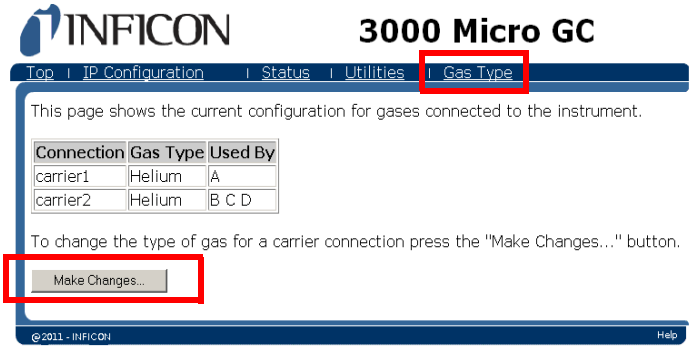
Step	Description
1	The type of carrier gas used for analysis can be changed through the embedded web page. **NOTE:** If a carrier gas type is changed without following this procedure, inverted peaks will appear in the chromatogram.
2	Open a web browser, such as Internet Explorer.
3	In the address bar, type in the current 3000 Micro GC IP Address. Press **Enter**. **NOTE:** At the factory, the instrument IP address was set to **10.1.1.101**. 
4	The instrument's embedded webpage will display. Click the **Gas Type** tab. The current gas configuration for installed GC modules is shown. Click **Make Changes**. 
5	When prompted for a **User name** and **Password**, type **gasconfig** for both. 

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Table 4-1 Changing the carrier gas configuration (continued)

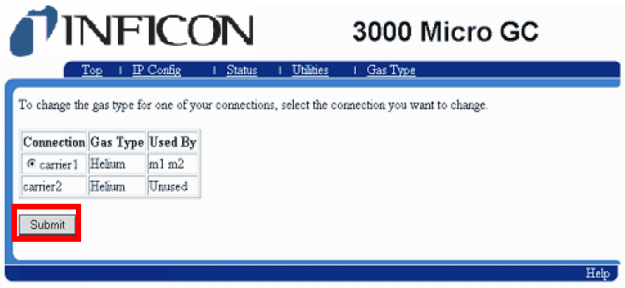
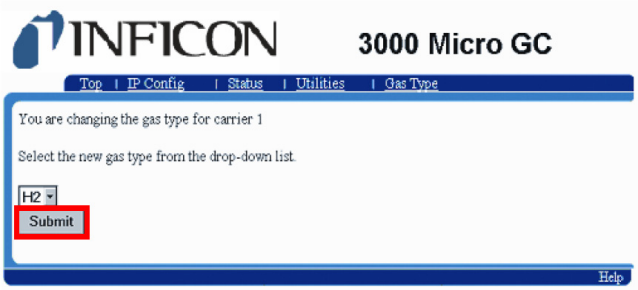
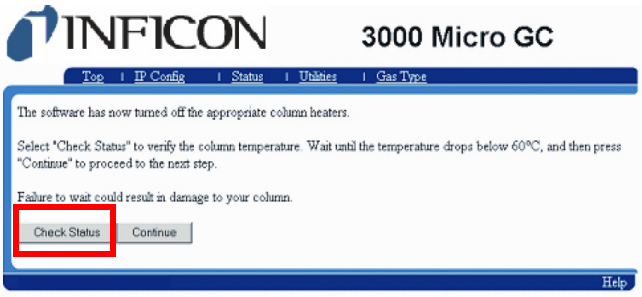
Step	Description
6	Under **Connection**, select the carrier gas connection that corresponds to the desired GC module. Click **Submit.** **NOTE:** Entries **m1** and **m2** represent channels A and B, respectively. Entries **m3** and **m4** represent channels C and D, if installed. **NOTE:** In the example shown above, **carrier1** is assigned to modules **m1** and **m2**. **Carrier2** is unused. 
7	Select the new carrier gas type from the drop-down list. Click **Submit**. 
8	The column heaters will turn off to avoid thermal shock and degradation. Click **Check Status** to view the current column temperatures. 

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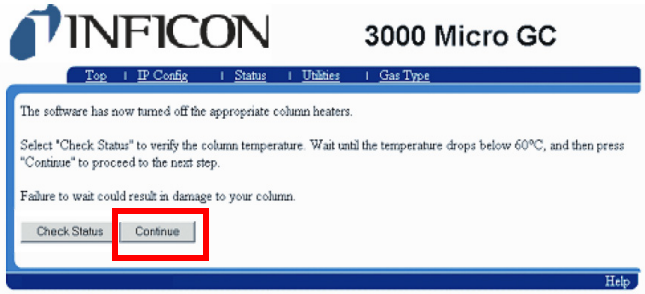
Table 4-1 Changing the carrier gas configuration (continued)

Step	Description
9	When the column temperatures are below 60ºC, click **Continue**. **NOTE:** Closing the browser or clicking back will cancel any changes. 
10	Change the carrier gas supply connections at the instrument back panel, and check for leaks. **HINT:** Label the new carrier gas type at the back of the instrument, for quick visual reference in the future.
11	A window will prompt to restart the instrument: Click **Restart**. *Allow three minutes for the instrument to update configuration files.* **CAUTION** **Do not turn off the power without waiting at least three minutes. 3000 Micro GC must update configuration files before power is turned off. If power is turned off too soon, the files could be corrupted and render 3000 Micro GC unusable.** 
12	To run samples using the reconfigured gas type, click (Windows) **Start >> Programs >> Chromatography >> EZ IQ Config**. Update 3000 Micro GC configuration in EZ IQ. See 3000 Micro GC Guide 6, Configuring a 3000 Micro GC with EZ IQ.
13	A new EZ IQ method must now be created for the instrument.

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3000 Micro GC Guide 5
Installing EZ IQ

Table 5-1 Installing EZ IQ

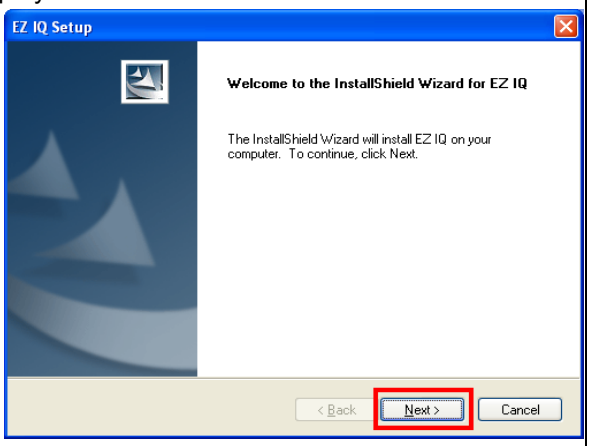
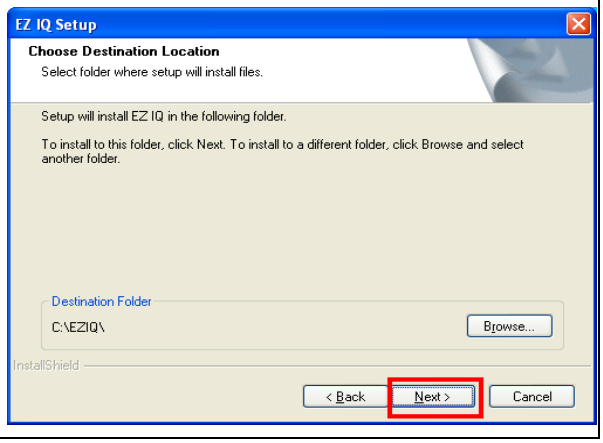
Step	Description
1	Insert the **EZ IQ Installation CD** into the PC CD-ROM drive. The **CD Installer** window will display. If it does not display, double-click **CDInstaller.exe** under the CD-ROM root drive.
2	Click **Install EZ IQ** to start the installation. 
3	The **EZ IQ Setup - Welcome** window will display. Click **Next >**. 
4	The **EZ IQ Setup - Choose Destination Location** window will display. Choose an EZ IQ software installation destination folder. The default destination folder is **C:\EZIQ**. Click **Next >**. 

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Table 5-1 Installing EZ IQ (continued)

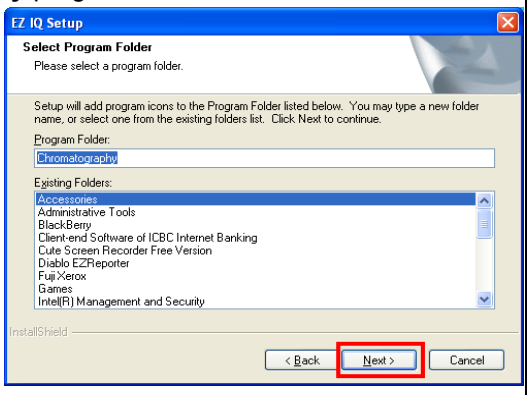
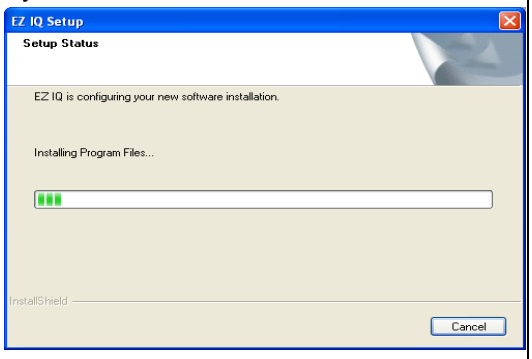
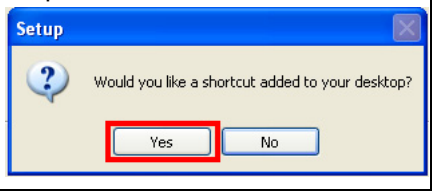
Step	Description
5	The **EZ IQ Setup - Select Program Folder** window will display. In the **Program Folder:** box, type in a name for the program folder. This name will be shown in the (Windows) **Start >> All Programs** menu. Use the default **Chromatography** program folder name. Click **Next >**. 
6	The **EZ IQ Setup - Setup Status** window will display. 
7	When prompted, click **Yes** to create an EZ IQ program desktop short cut. 

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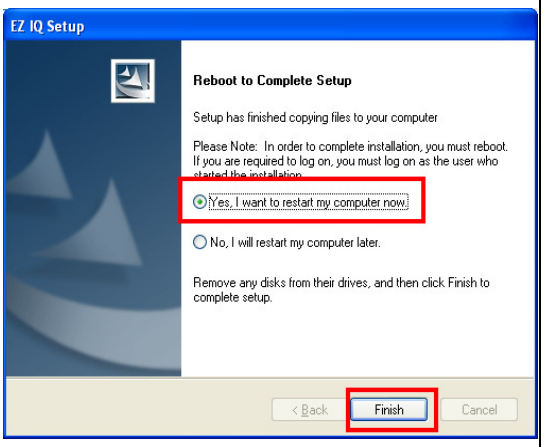
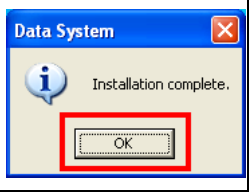
Table 5-1 Installing EZ IQ (continued)

Step	Description
8	When the installation is complete, the **EZ IQ Setup Reboot to Complete Setup** window will display. Click **Yes, I want to restart my computer now.** Click **Finish**. 
9	After the computer has restarted, the **Data System** window will display. Click **OK** to complete the installation. 

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3000 Micro GC Guide 6
Configuring a 3000 Micro GC with EZ IQ

Table 6-1 Configuring 3000 Micro GC with EZ IQ

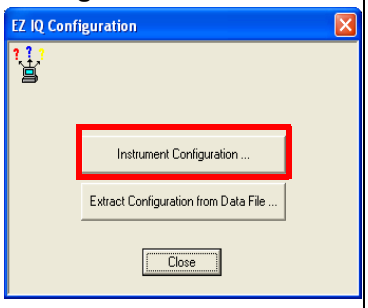
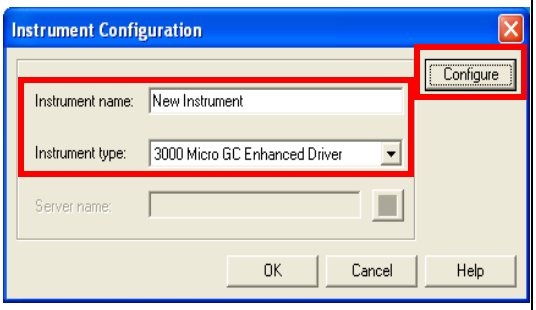
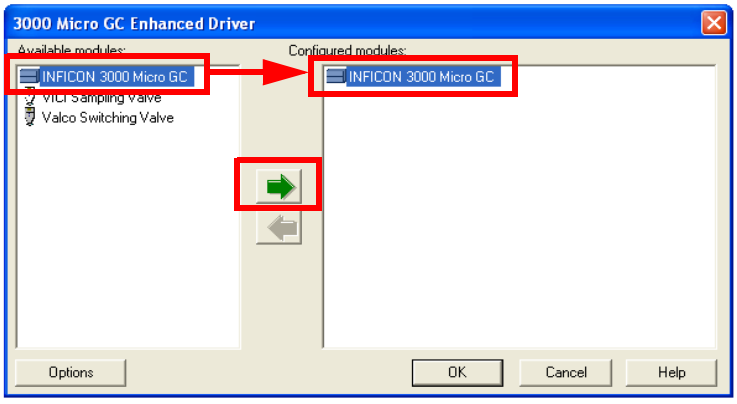
Step	Description
1	Click (Windows) **Start >> All Programs >> Chromatography >> EZ IQ Config**.
2	The **EZ IQ Configuration** window will display. Click **Instrument Configuration...**. 
3	On the **Instrument Configuration** window, type an **Instrument name:**, select **Instrument type: 3000 Micro GC Enhanced Driver**, and click **Configure**. **NOTE:** This guide outlines the procedure to configure the **3000 Micro GC Enhanced Driver**. For the **3000 Micro GC Classic Driver,** see the appropriate chapter in the PN 074-538-P1 EZ IQ Operating Manual. 
4	The **3000 Micro GC Enhanced Driver** window will display. Under **Available modules:** select the **INFICON 3000 Micro GC** icon. Click the ➔ arrow to move the **INFICON 3000 Micro GC** icon to **Configured modules:**. 

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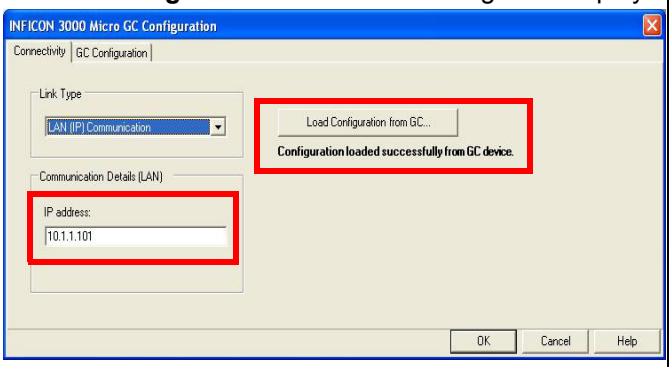
Table 6-1 Configuring 3000 Micro GC with EZ IQ (continued)

Step	Description
5	Double-click the **INFICON 3000 Micro GC** icon in the **Configured modules** panel to open the **INFICON 3000 Micro GC Configuration** window.
6	On the **INFICON 3000 Micro GC Configuration** window. Click the **Connectivity** tab. In the **IP address:** box, type the IP address of 3000 Micro GC. Click **Load Configuration from GC…**. Once the 3000 Micro GC configuration has been properly loaded into EZ IQ, a **Configuration loaded successfully from GC device** or **GC Configuration Available** message will display. 
7	Click **OK** to exit the **INFICON 3000 Micro GC Configuration** window.
8	Click **OK** to exit the **INFICON 3000 Micro GC Enhanced Driver** window.
9	Click **OK** to exit the **Instrument Configuration** window.
10	Click **Close** to exit the **EZ IQ Configuration** window.

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3000 Micro GC Guide 7
3000 Micro GC Method Setup

Table 7-1 Creating a method

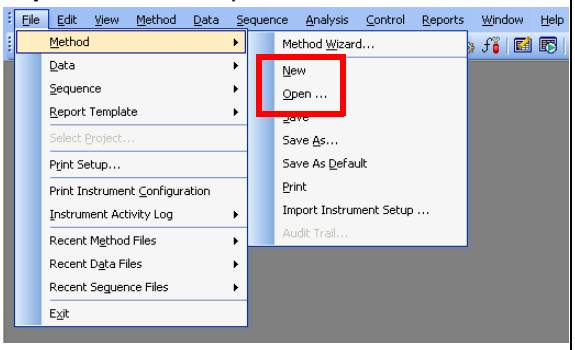
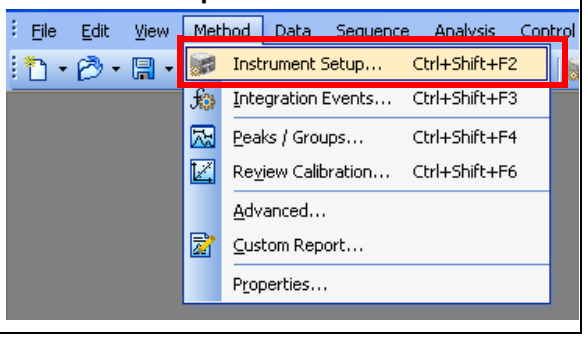
Step	Description
1	It is possible to either create a new method or open an existing method in **EZ IQ**. Click **File >> Method** and select either **New** or **Open** from the drop-down list. 
2	To edit method parameters, click **Method >> Instrument Setup**. 

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Table 7-1 Creating a method (continued)

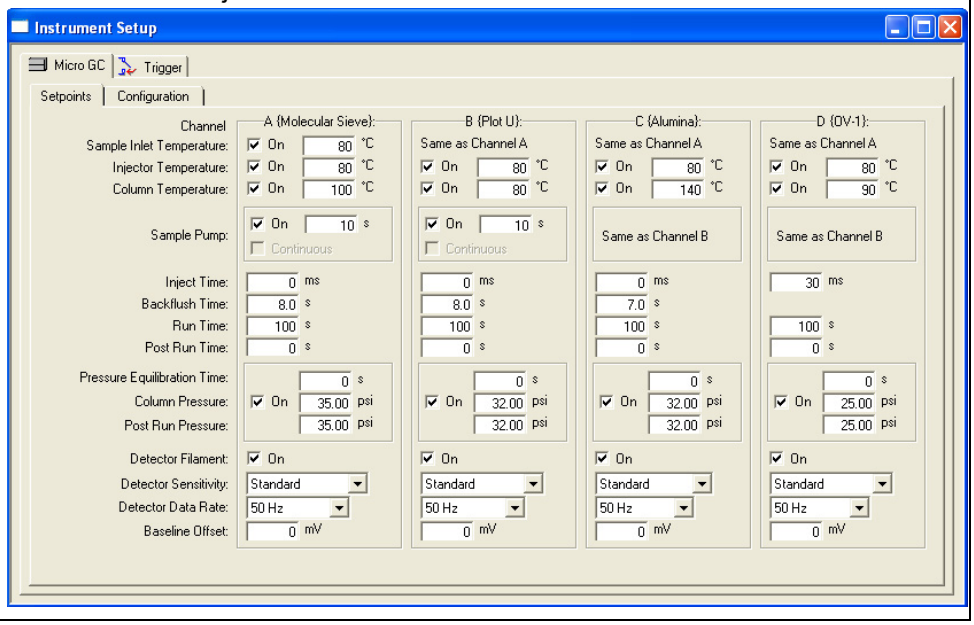
Step	Description
3	The **Instrument Setup** window will display. It will display parameters that can be edited. **NOTE:** The **Instrument Setup** window is configuration dependent. Populate sample acquisition parameters as desired, such as **Injector Temperature**, **Column Temperature**, **Sample Pump** time, **Column Pressure**, etc. Ensure that the **Run Time** is long enough for the last expected peak to elute. If the elution time is unknown, conduct a run and verify the presence of the last expected peak. If necessary, increase the **Run Time.** The default **Inject Time** should be set between: ◆ 0-50 ms for a fixed volume injector ◆ 0-100 ms for a variable volume injector ◆ 0-350 ms for a variable large volume injector (LVI) ◆ 0-250 ms for a backflush injector 

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Table 7-1 Creating a method (continued)

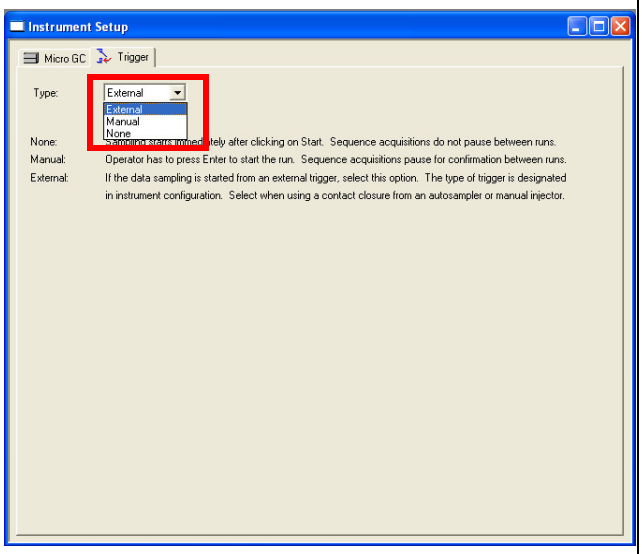
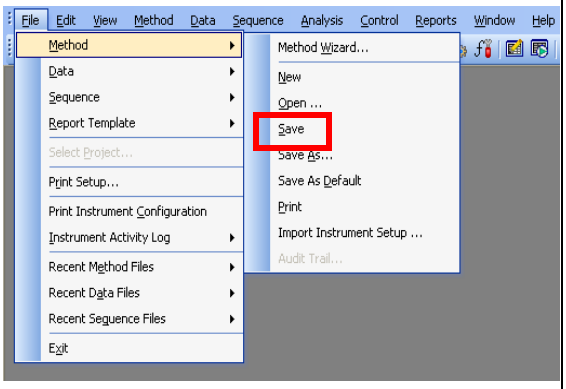
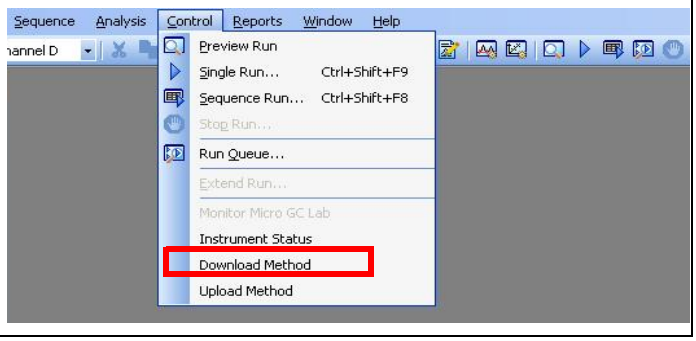
Step	Description
4	Click the **Trigger** tab. In the Type: list, select the trigger type. ◆ If the sample run will be initiated directly through EZ IQ, select **None**. ◆ If the sample run will be triggered by an external event through a remote control connection, select **External**. 
5	To save the method, click **File >> Method >> Save** to overwrite the existing method file or **Save As** to save a new method file. 
6	When a new method is created, or when a method is changed or opened, it must be downloaded to 3000 Micro GC. Click **Control >> Download Method**. 

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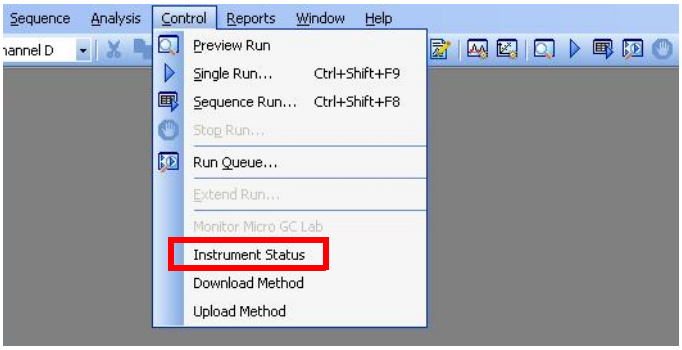
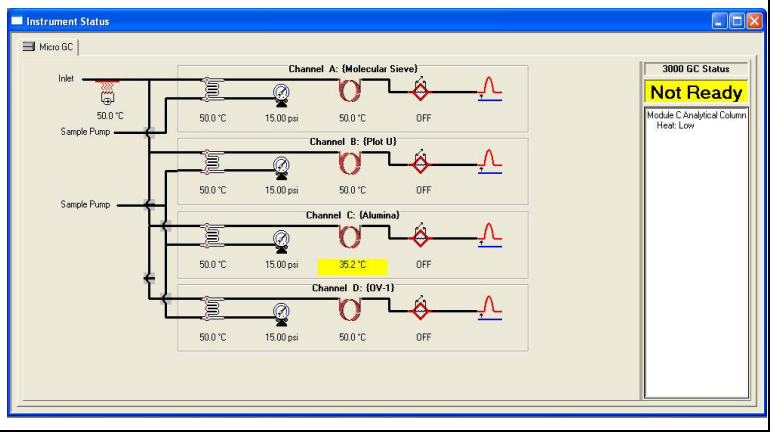
Table 7-1 Creating a method (continued)

Step	Description
7	Click **Control >> Instrument Status** to view the status of the instrument. **NOTE:** The status will read **Not Ready**, highlighted in yellow, if paramters have not reached their set points. Parameters that are changing are highlighted in yellow. A run cannot be started unless the status reads **Ready**, highlighted in green.  

3000 Micro GC Guide 8
Running a Sample

Table 8-1 Running a sample

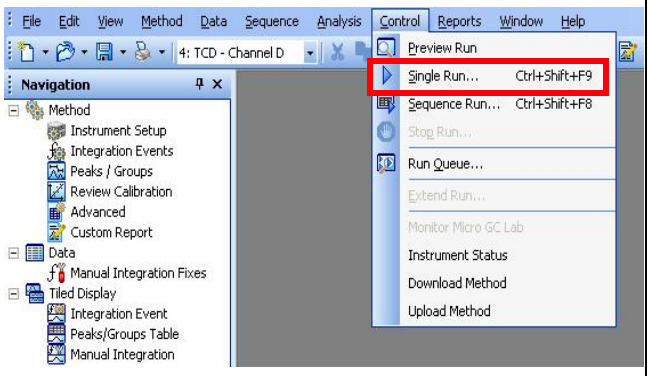
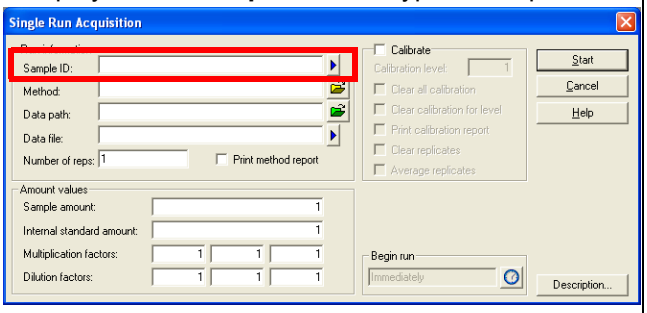
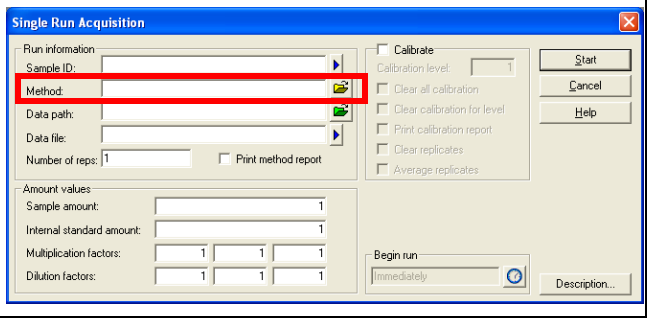
Step	Description
1	To start the run, click **Control >> Single Run**. 
2	The **Single Run Acquisition** window will display. In the **Sample ID:** box, type a Sample ID. 
3	The method will default to the method that is currently loaded. To change the method, click the folder icon located on the right of the **Method:** box and select the desired method. 

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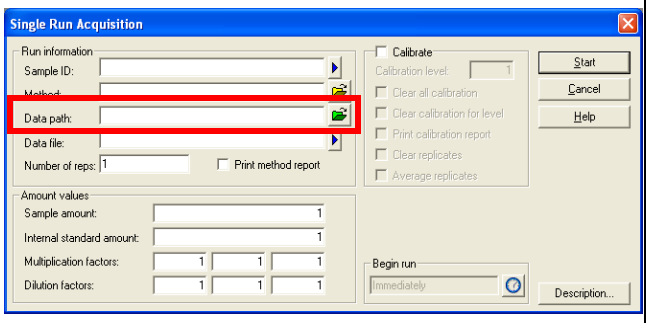
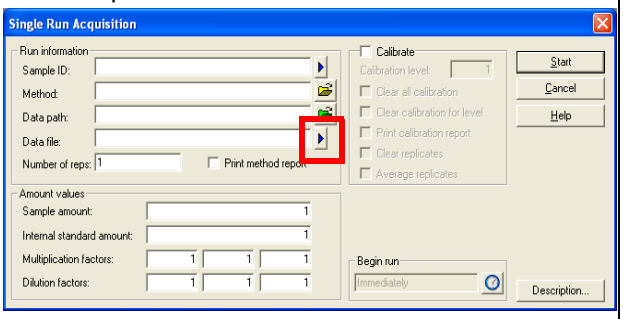
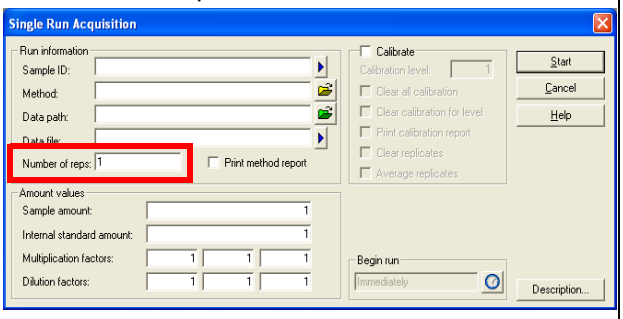
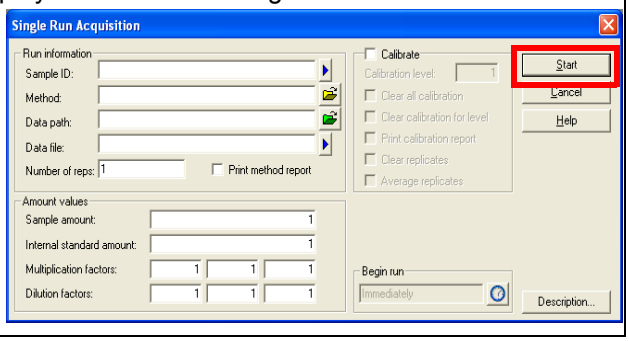
Table 8-1 Running a sample (continued)

Step	Description
4	Select a path for storage of data files by selecting the folder icon located on the right of the **Data path:** box. 
5	The **Data file:** box is used to create the filename. To automatically include certain descriptors such as **Sample ID**, **Method Name**, and **Date and Time**, click the blue arrow, located to the right of the **Data File** field. Select the desired descriptors. 
6	In the **Number of Reps** box, type the desired number of repetitions. 
7	Click **Start** to begin a run. Data will be displayed in the chromatogram window. 

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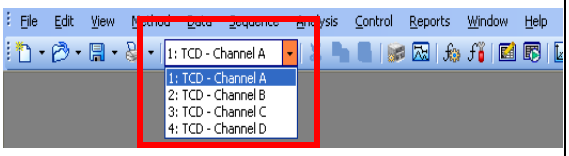
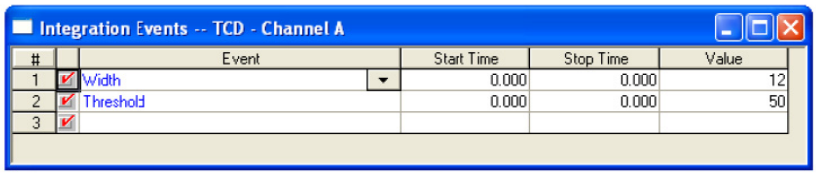
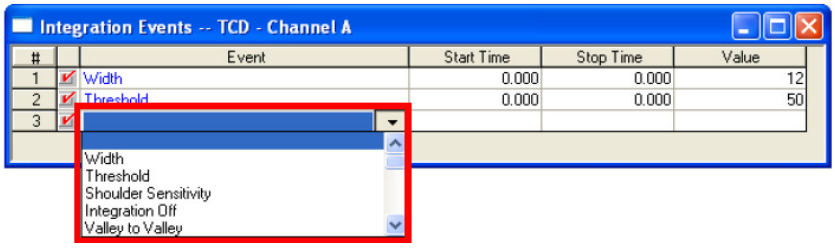
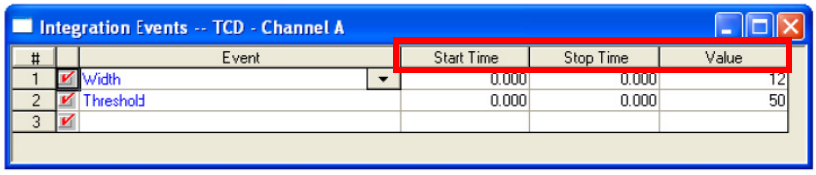
3000 Micro GC Guide 9
Integrating Chromatograms

Table 9-1 Integrating Chromatograms

Step	Description
1	Integration events are used to customize the integration of certain peaks or regions of the chromatogram. Refer to the 074-538 EZ IQ Operating Manual or online help in the EZ IQ software for descriptions of individual events. In **EZ IQ**, click **Method >> Integration Events**.
2	Select a channel to add or edit integration events. To change the channel, select the appropriate channel from the drop-down list on the toolbar. 
3	The **Integration Events** window will display the default integration events. 
4	To add a new event, click on a blank field under **Event** in the table. Select the desired integration event from the drop-down list. 
5	Adjust the integration **Start Time**, **Stop Time**, and **Value** as desired. 
6	Click **Analysis >> Analyze** to apply the changes.
7	To save the method, click **File >> Method >> Save**.

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3000 Micro GC Guide 10
Setting Annotations

Table 10-1 Setting Annotations

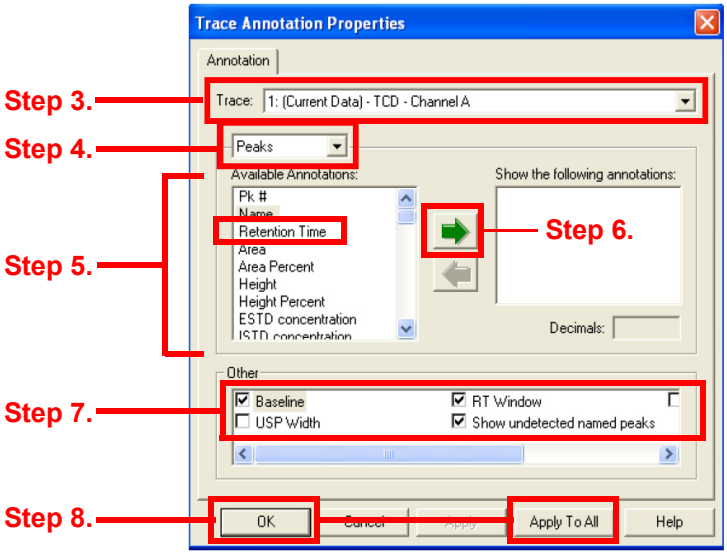
Step	Description
1	In EZ IQ, right-click on a chromatogram and click **Annotations**. 
2	The **Trace Annotation Properties** window will appear. 
3	In the **Trace:** list, select the desired chromatogram.
4	For the selected chromatogram, select **Peaks** or **Groups** from the drop-down list.
5	On the **Available Annotations:** list, select the features to annotate. For example, select **Retention Time** to display the retention time above the integrated peaks.
6	When an annotation is highlighted, double-click the annotation or click the green arrow key to move it from **Available Annotations:** to **Show the following annotations:**. **NOTE:** For certain annotations, the number of decimal places can be designated. Enter this value in the **Decimals** box for the highlighted item.

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Table 10-1 Setting Annotations (continued)

Step	Description
7	Select the check boxes to display **Baseline**, **USP Width**, **Retention Time Window**, **Show Undetected Named Peaks**, or **Group Range** on the chromatogram.
8	When finished selecting annotations, click **Apply to All** or **OK**.

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3000 Micro GC Guide 11
Qualifying Peaks and Groups

Table 11-1 Qualify peaks and groups

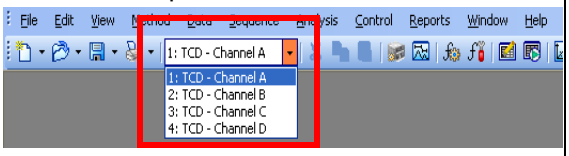
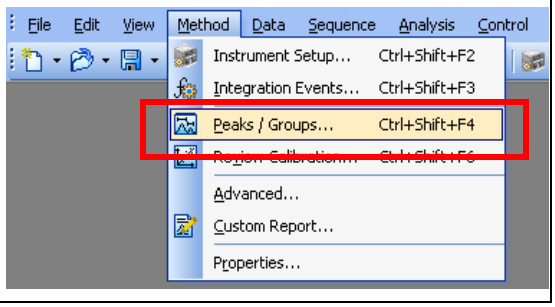
Step	Description
1	Once a run is finished, peaks and groups can be identified based on retention time. Select a channel to add or edit peak or group information from the drop-down list on the tool bar. 
2	Click **Method >> Peaks/Groups**. 

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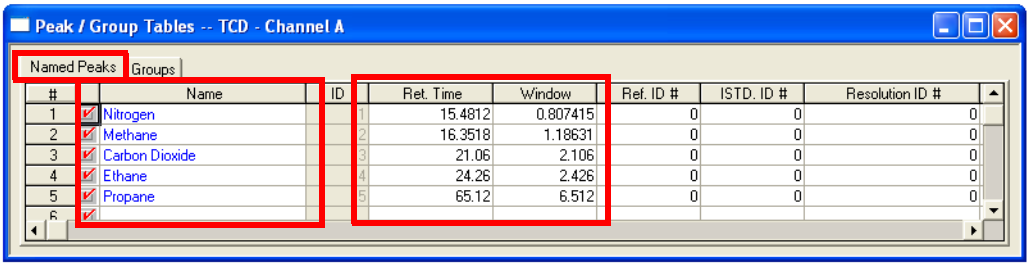
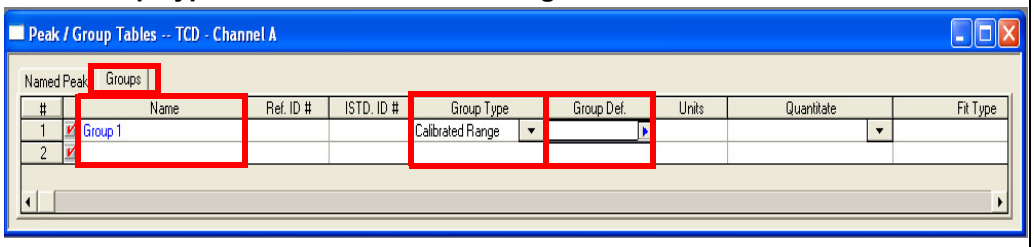
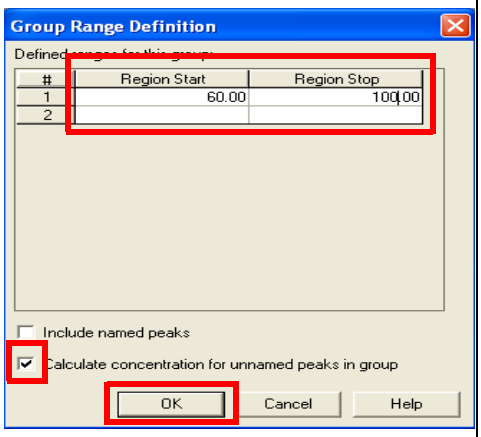
Table 11-1 Qualify peaks and groups (continued)

Step	Description
3	The **Peak/Group Tables** window will display. There are tabs for **Named Peaks** and **Groups**. On the **Named Peaks** tab, enter the **Name**, **Ret.Time**, and retention time **Window** for each component in the channel.  To enter group information, click the **Groups** tab. In a blank **Name** box, type the name of the group. In the **Group Type** list, select **Calibrated Range**.  Click the blue arrow on the right of the **Group Def.** field. The **Group Range Definition** window will display. Type a **Region Start** and **Region Stop**, in minutes or seconds. **NOTE:** In the example, **Region Start** and **Region Stop** are displayed in seconds. Ensure that **Calculate Concentrations for Unnamed Peaks in Group** is selected from the drop-down list. Click **OK** to return to the **Groups** tab. 
4	Repeat Steps 1 to 3 for all channels.
5	Click **Analysis >> Analyze** to apply the changes.
6	Save the method by clicking **File >> Method >> Save**.

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3000 Micro GC Guide 12
Adjusting Retention Time Windows

Table 12-1 Adjusting retention time windows

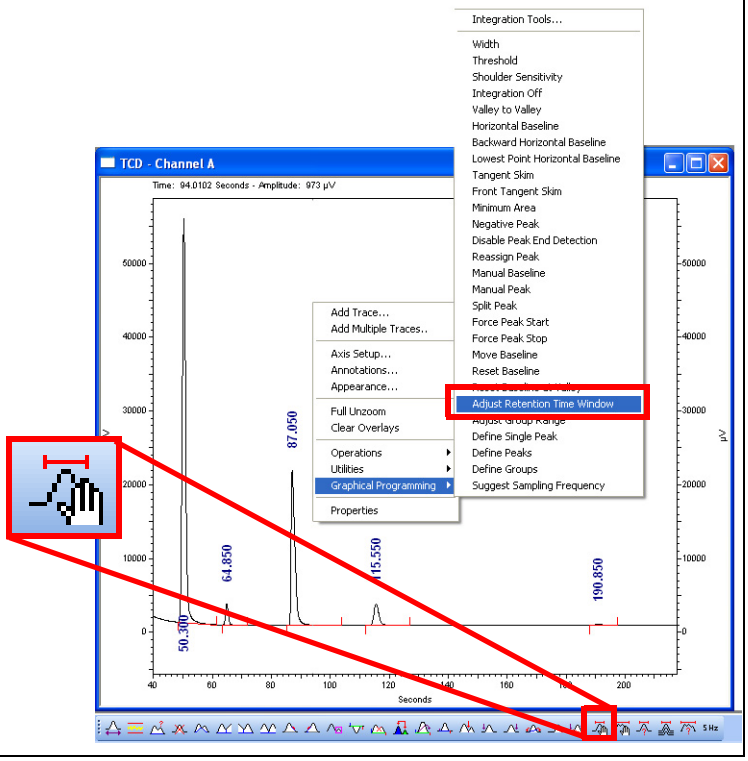
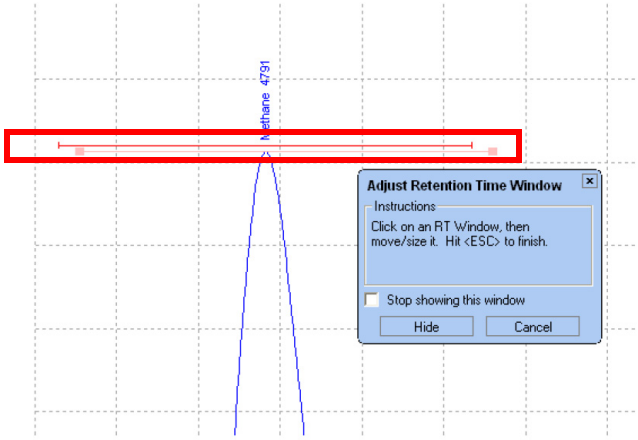
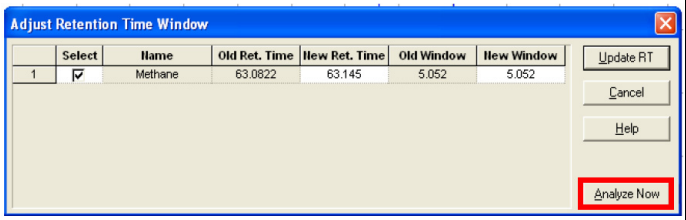
Step	Description
1	In EZ IQ, click the **Adjust Retention Time Window** icon on the **Int. Events** tool bar. Alternatively, right-click on the chromatogram and click **Graphical Programming >> Adjust Retention Time Window**. 

Table 12-1 Adjusting retention time windows (continued)

Step	Description
2	A blue **Adjust Retention Time Window** window will display. Click directly on the desired retention time window. **HINT:** Click and drag from the corner of the window to resize. 
3	Press **<Esc>** to display the **Adjust Retention Time Window** option. Click **Analyze Now** to apply the changes and exit the window. 

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3000 Micro GC Guide 13
Conducting a Single Level Calibration

Table 13-1 Conduct a single level calibration

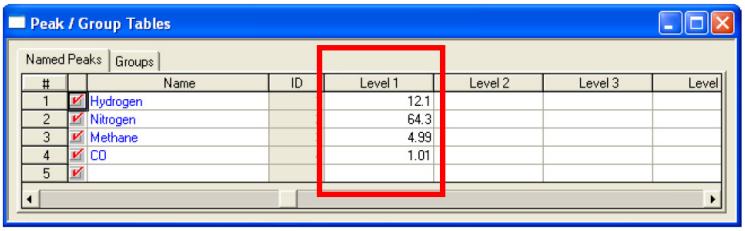
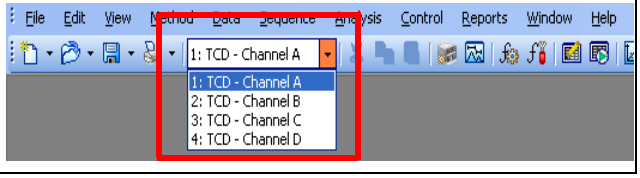
Step	Description
1	Prior to conducting qualitative or quantitative analysis on 3000 Micro GC, it is necessary to properly calibrate the instrument using a known calibration gas. The calibration process identifies the elution order of the component peaks in a chromatogram, as well as the detector response each component demonstrates with the instrument. ◆ If the sample gas concentration is close to the calibration gas, a single level calibration is sufficient. Go to step 2. ◆ If the sample gas concentration varies over a broad range, a multiple level calibration is recommended. See 3000 Micro GC Guide 14, Conducting a Multiple Level Calibration.
2	To conduct a single level calibration, run a sample of a calibration gas (i.e., a sample with known component concentrations). The generated data file can be used to define the calibration peaks.
3	Connect the calibration gas to the front inlet of 3000 Micro GC. Ensure that the calibration gas output pressure and the 3000 Micro GC inlet is properly regulated to between 1-25 PSI. Open the gas cylinder to begin flow to the instrument.
4	Click **Control >> Single Run** to run the sample with the currently loaded method. Type the desired **Sample ID** and click **Start**. After the run is complete, ensure all peaks are integrated and annotated.
5	The known concentration of components in the calibration gas must be recorded in the **Peaks/Groups** table. Click **Method >> Peaks/Groups**. The **Peak/Group Tables** window will display. Use the scroll bar to scroll until the **Level 1** column is visible. 
6	Enter the concentration for the component under **Level 1**. Repeat this for all peaks and groups in each of the channels. To add or edit calibration information, select a channel from the drop-down list on the tool bar. 

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Table 13-1 Conduct a single level calibration (continued)

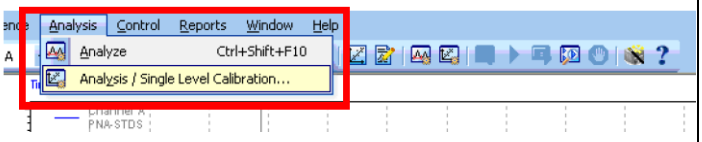
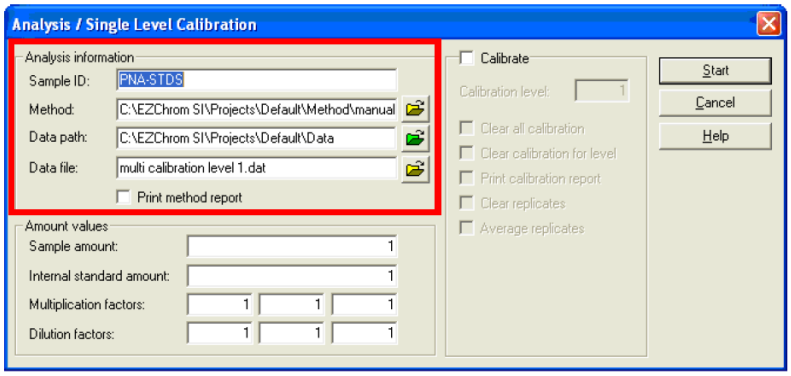
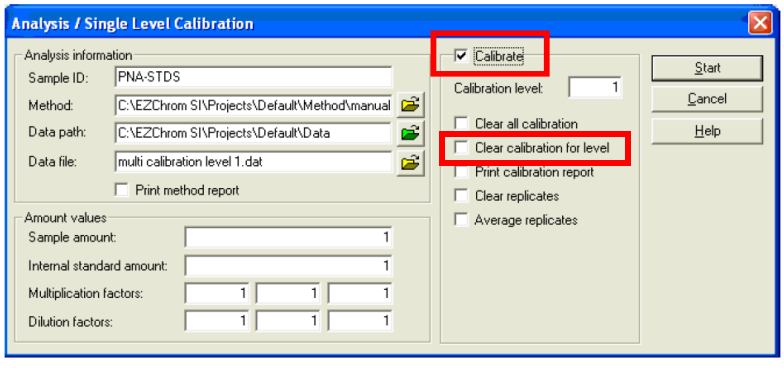
Step	Description
7	To calibrate, click **Analysis >> Analysis/Single Level Calibration**. 
8	The **Analysis/Single Level Calibration** window will display. 
9	In the **Sample ID:** box, type the sample identification, if not already present.
10	In the **Method:** box, select the name of the method to be calibrated, if not already present. To do so, click the **Open file** icon adjacent to the field.
11	In the **Data path:** box, select the data path name, if not already present. To do so, click the **Open file** icon adjacent to the field.
12	In the **Data file:** box, select the file name, if not already present. To do so, click the **Open file** icon adjacent to the field.
13	The **Amount values** will remain set at **1**; a value of **1** corresponds to a single level calibration.
14	Select **Calibrate**. In the **Calibration Level** box, type **1**. **NOTE:** For the initial calibration, it is not necessary to select any of the boxes involving clearing calibrations or replicates. However, if the method was previously calibrated and the calibrated information needs to be replaced, select **Clear all calibration** before starting. 

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Table 13-1 Conduct a single level calibration (continued)

Step	Description
15	When finished, click **Start**.
16	When the analysis is complete, the chromatogram will be integrated, and the areas for the peaks identified as calibration compounds will be entered into the method. In addition, a calibration curve will be generated using these areas. The method is now calibrated for a single level.
17	To save the calibration to the method, click **File >> Method >> Save**.

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3000 Micro GC Guide 14
Conducting a Multiple Level Calibration

Table 14-1 Conduct a multiple level calibration

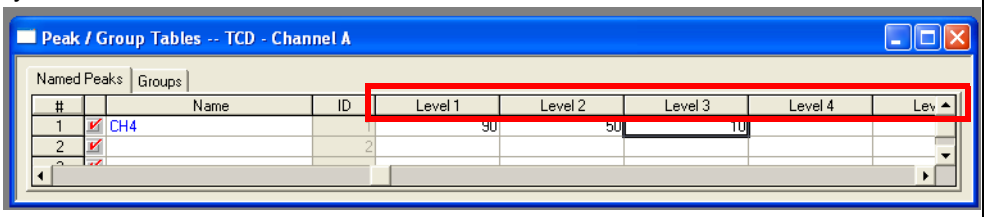
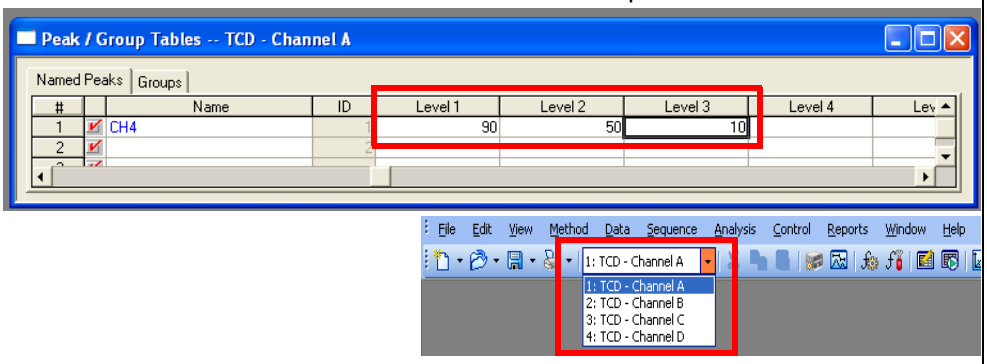
Step	Description
1	If a multiple level calibration is required, run sample calibration standards of different concentration levels.
2	The known concentration of components in the calibration gas must be recorded in the Peaks/Groups table. Click **Method >> Peaks/Groups**. The **Peak/Group Tables** window will display. Use the scroll bar to display the columns for **Level 1**, **Level 2**, etc. 
3	Type the concentrations for the component at each level. Repeat this for all peaks and groups in each of the channels. **NOTE:** Each level represents one calibration gas standard. Select a channel to add or edit calibration information via the dropdown list on the tool bar. 
4	Connect the calibration gas. Ensure that the tank is properly regulated to between 1-25 PSI, if going direct to the 3000 Micro GC inlet. Turn on the desired calibration gas. Connect the calibration gas to the front inlet of 3000 Micro GC. Ensure that the calibration gas output pressure and the 3000 Micro GC inlet is properly regulated to between 1-25 PSI. Open the gas cylinder to begin gas flow to the instrument.
5	Click **Control >> Single Run** to run the sample on the desired method. Type the **Sample ID** into the box and click **Start**. After the run is complete, ensure all peaks are integrated and annotated.

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Table 14-1 Conduct a multiple level calibration (continued)

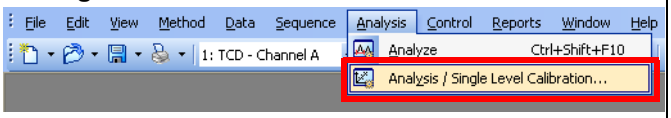
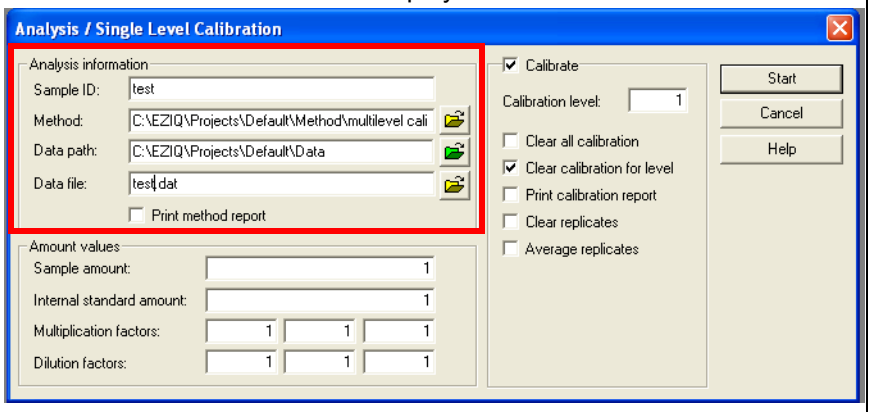
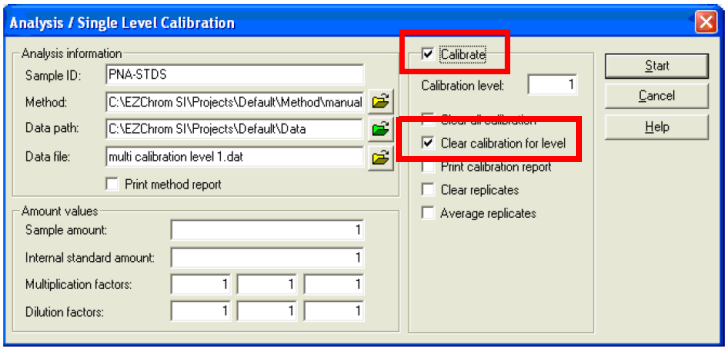
Step	Description
6	To calibrate, click **Analysis >> Analysis/Single Level Calibration**. 
7	The **Analysis/Single Level Calibration** window will display. 
8	In the **Sample ID:** box, type the sample identification, if not already present.
9	In the **Method:** box, select the name of the method to be calibrated, if not already present, by clicking the **Open file** icon adjacent to the field.
10	In the **Data path:** box, select the data path name, if not already present, by clicking the **Open file** icon adjacent to the field and selecting the desired data path.
11	In the **Data file:** box, select the file name, if not already present, by clicking the **Open file** icon adjacent to the field.
12	The **Amount values** are to remain set to **1**; a value of **1** corresponds to a single level calibration.
13	Select **Calibrate**. In the **Calibration level:** box, type **1**. **NOTE:** For the initial calibration, it is not necessary to select any of the boxes involving clearing calibrations or replicates. However, if the method was previously calibrated and the calibrated information needs to be replaced, select **Clear calibration for level** before starting. 
14	Click **Start** after completing the window.

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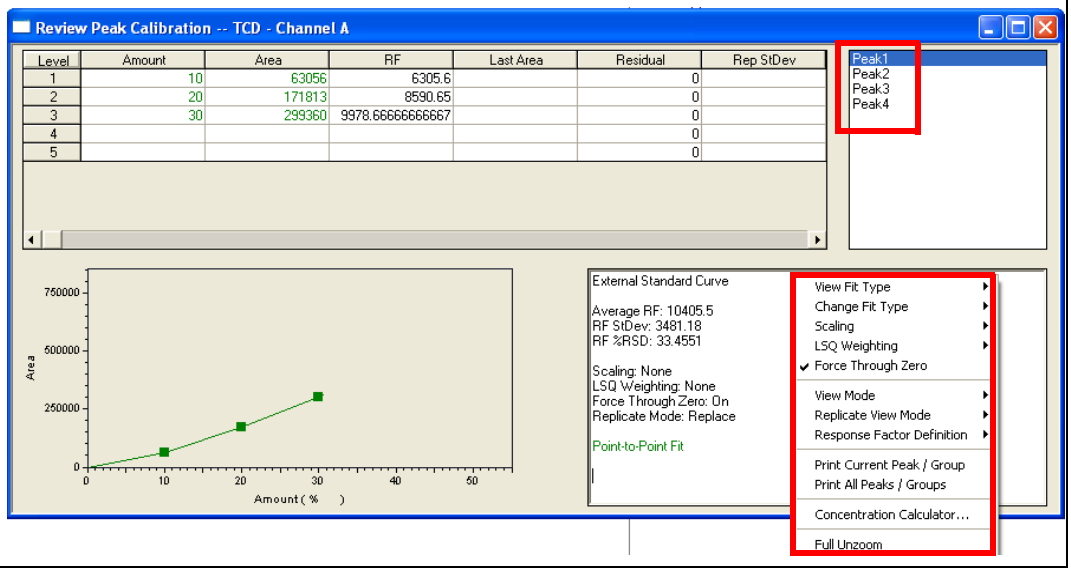
Table 14-1 Conduct a multiple level calibration (continued)

Step	Description
15	When the analysis is complete, the chromatogram will be integrated. The areas for the peaks identified as calibration compounds will be entered into the method. In addition, a calibration curve will be generated using these areas. The method is now calibrated for one of the desired levels.
16	Repeat steps 4 to 15 to calibrate other levels, one level at a time.
17	After completing a calibration in the window, click **Method >> Review Calibration** to review the calibration curve and its associated data. Each peak will have its own calibration curve. If desired, right-click on a blank area to bring up options such as **View Fit Type**, **Change Fit Type**, and a **Concentration Calculator**. 

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3000 Micro GC Guide 15
Calibration with Average Replicates

Table 15-1 Conducting a calibration with replicates

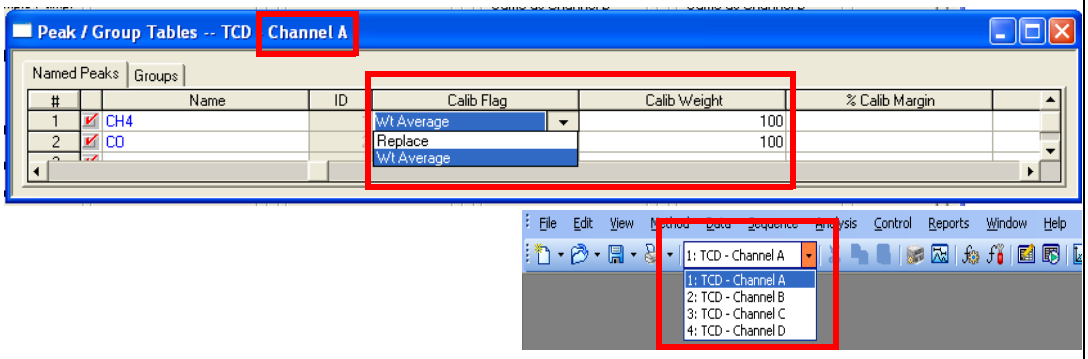
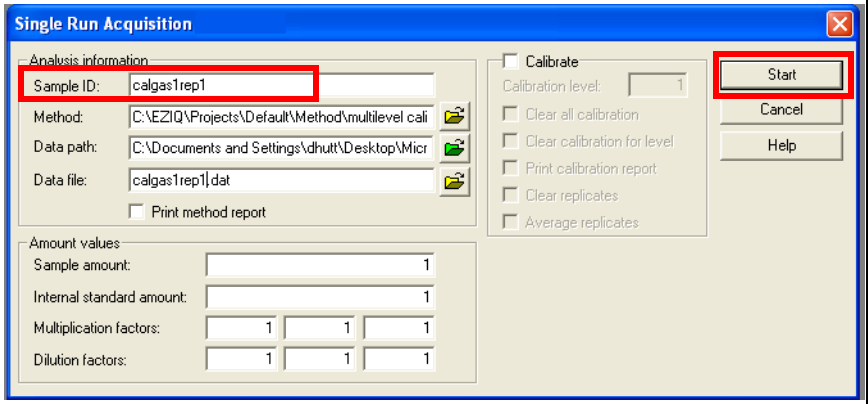
Step	Description
1	This guide will go through the procedure for a three point calibration of a single level. The procedure can be repeated for multiple levels, if desired.
2	Click **Method >> Peaks/Groups**. The **Peak/Group Tables** window will display. Use the scroll bar to display the **Calib Flag** and **Calib Weight** columns. Change the **Calib Flag** to **Wt Average** using the drop-down list. Enter **100** for the **Calib Weight**. Repeat for each component in each channel. **NOTE:** Select a channel from the drop-down list on the toolbar to add or edit calibration information. 
3	Connect the calibration gas to the front inlet of 3000 Micro GC. Ensure that the calibration gas output pressure is properly regulated between 1-25 PSI. Open the gas cylinder to begin gas flow to the instrument.
4	Click **Control >> Single Run.** In the **Sample ID:** box, type a unique sample identifier. In this example, the **Sample ID:** is **calgas1rep1**. Click **Start** to begin a run. 
5	After the run is complete, ensure all peaks are integrated and annotated.

Table 15-1 Conducting a calibration with replicates (continued)

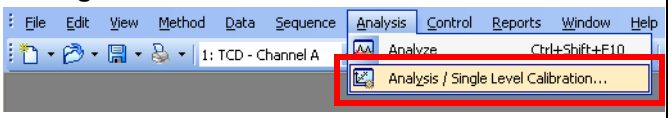
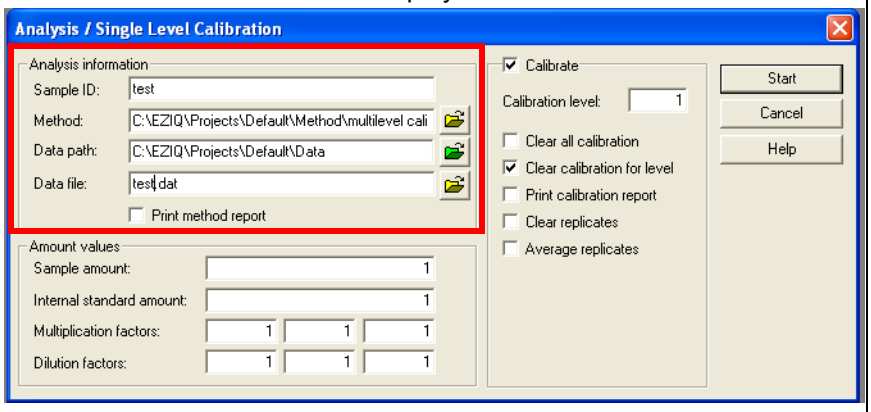
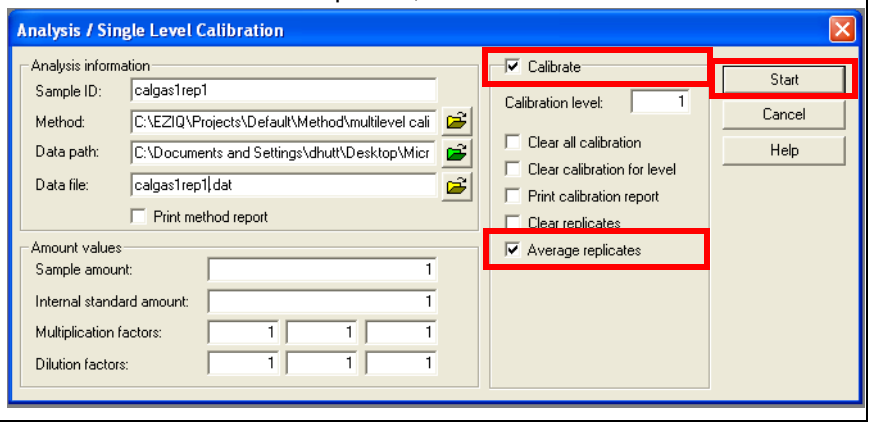
Step	Description
6	To calibrate, click **Analysis >> Analysis/Single Level Calibration**. 
7	The **Analysis/Single Level Calibration** window will display. 
8	In the **Sample ID:** box, type the sample identification, if not already present.
9	In the **Method:** box, select the name of the method to be calibrated, if not already present, by clicking the **Open file** icon adjacent to the field.
10	In the **Data path:** box, select the data path name, if not already present, by clicking the **Open file** icon adjacent to the field and selecting the desired data path.
11	In the **Data file:** box, select the file name, if not already present, by clicking the **Open file** icon adjacent to the field.
12	The **Amount values** are to remain set to **1**; a value of **1** corresponds to a single level calibration.
13	Select the **Calibrate** setting and type **1** for **Calibration Level**. Select **Average replicates.** **NOTE:** For the initial calibration, it is not necessary to select boxes that involve clearing calibrations or replicates. However, if the method was previously calibrated and the calibrated information needs to be replaced, select **Clear all calibration**. 

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Table 15-1 Conducting a calibration with replicates (continued)

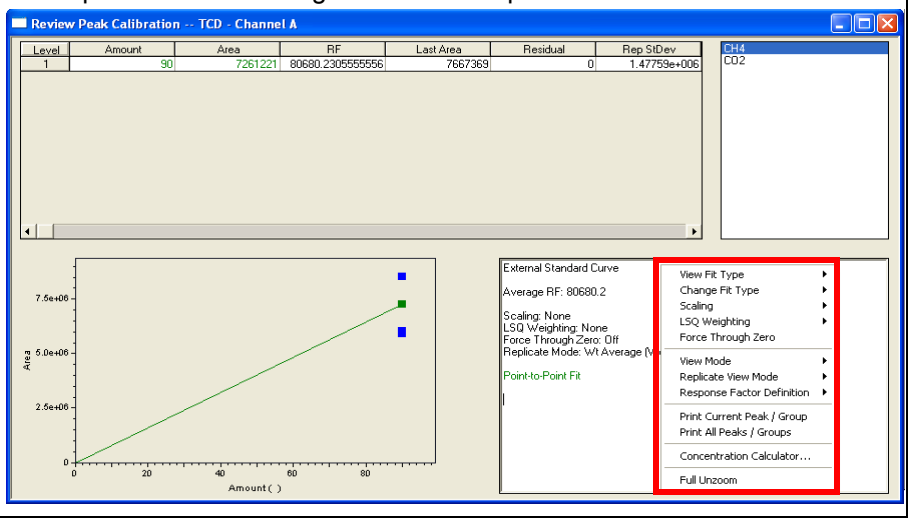
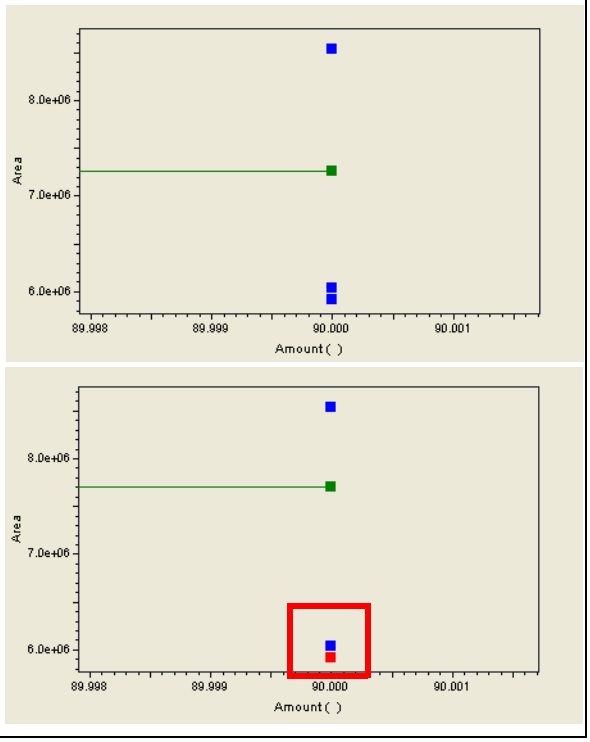
Step	Description
14	When finished, click **Start**.
15	When the analysis is complete, the chromatogram will be integrated, and the areas for the peaks identified as calibration compounds will be entered into the method.
16	With the calibration gas still connected and flowing, repeat steps 4 through 14 for each replicate. Ensure that each **Sample ID** is unique, for example **calgas1rep2**, **calgas1rep3**, etc.
17	After completing a calibration in the window, a calibration curve and associated data can be reviewed by clicking **Method >> Review Calibration**. Each peak will have its own calibration curve. If desired, right click on a black area on the window and select commands such as **View Fit Type**, **Change Fit Type**, and a **Concentration Calculator.** The peak **Area** will be reported as the average area of the replicates. 

Table 15-1 Conducting a calibration with replicates (continued)

Step	Description
18	On the calibration curve, a blue point represents a single replicate, and a green point represents the average of the replicates. Left-clicking on a single blue point will turn the point red and remove it from the average calculation. 

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3000 Micro GC Guide 16
Customizing a Method Report

Table 16-1 Customize a report

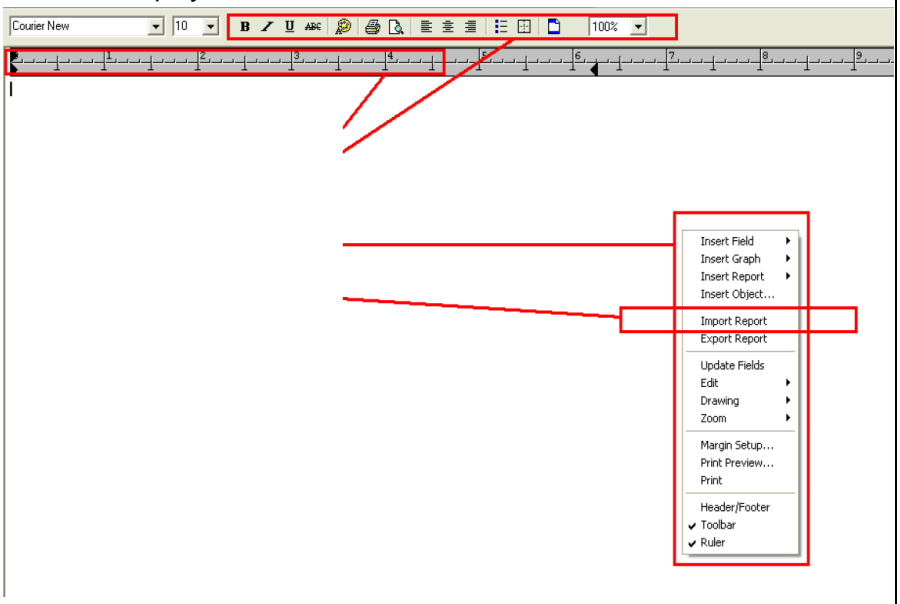
Step	Description
1	The default method report is blank. To add fields, graphs, and data, click **Method >> Custom Report**.
2	A method report window will display. 
3	Sections can be added to the report by right-clicking anywhere on the method report. Select the desired options such as **Insert Field**, **Insert Graph**, **Insert Report**, or **Insert Object**.
4	EZ IQ contains various pre-made template files. To import a template file, right-click in the method report window. Select **Import Report**.

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Table 16-1 Customize a report (continued)

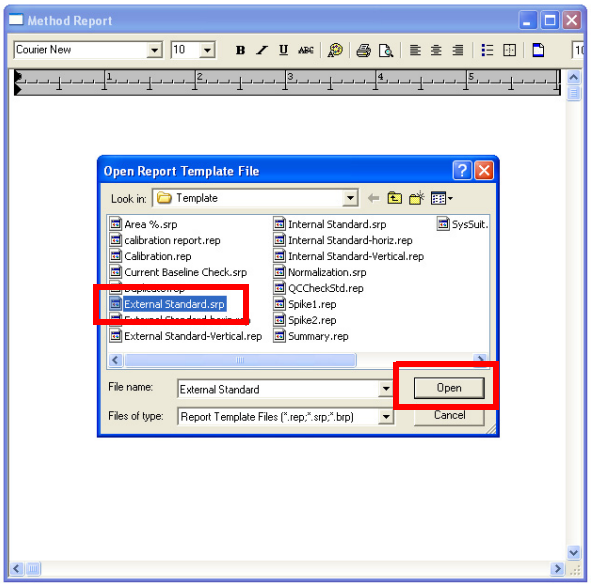
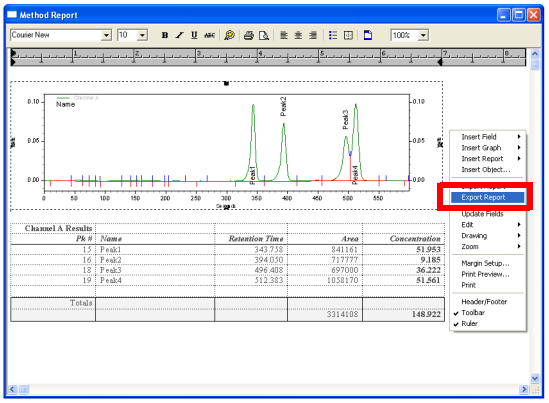
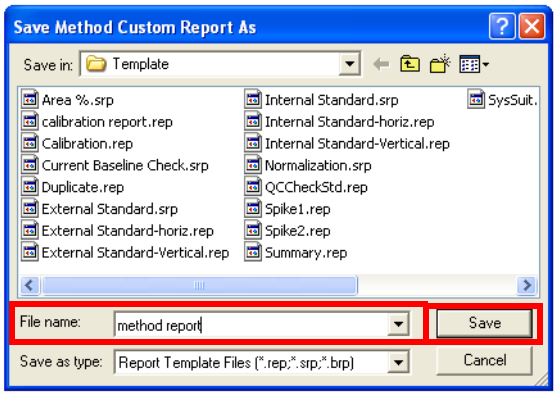
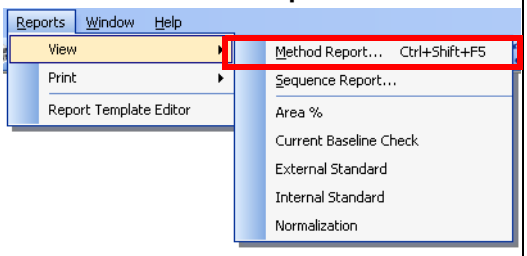
Step	Description
5	The **Open Report Template File** window will prompt to open a template file, such as **External Standard.srp**, shown below. Click **Open** to load the template file. 
6	To edit the template, right-click and insert options such as **Insert Field**, **Insert Graph**, **Insert Report**, and **Insert Object**.
7	Once all desired information has been modified or added, right-click in the **Method Report** and select **Export Report**. 

Table 16-1 Customize a report (continued)

Step	Description
8	The **Save Method Custom Report As** window will display. In the **File Name**: box, type a method report name. Click **Save**. 
9	To view the custom method report, select **Reports >> View >> Method Report**. 
10	To print the custom **Method Report**, right-click in the Method Report window, then select **Print** from the drop-down list.

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3000 Micro GC Guide 17
Customizing an ESTD Report

Table 17-1 Customizing an external standard (ESTD) report

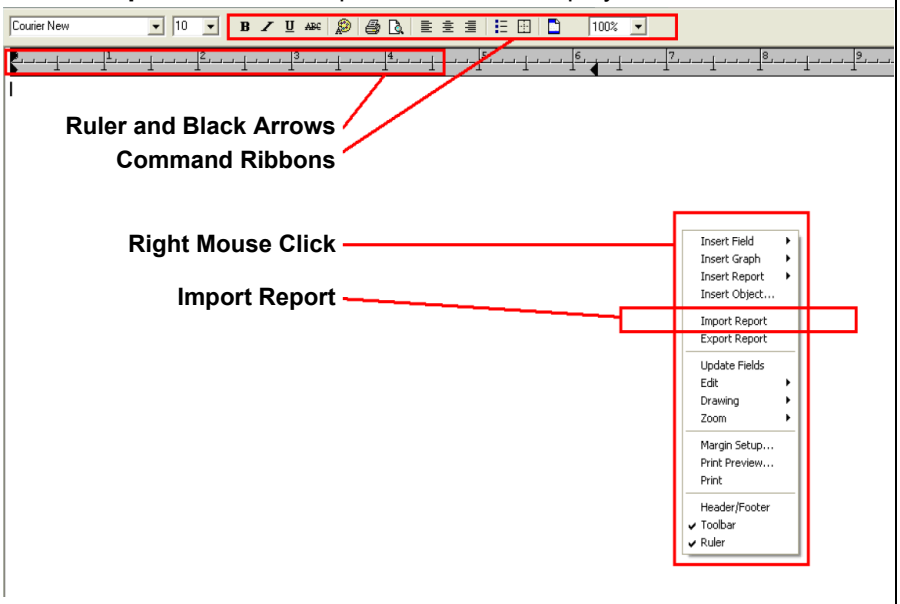
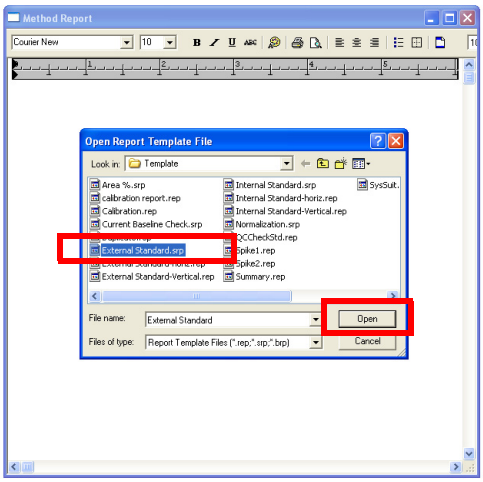
Step	Description
1	An External Standard (ESTD) Report contains information on retention time, area, and mole percent concentration. It is not method-specific. The same template will be applied to any method that is opened.
2	Click **Method >> Custom Report**. A method report window will display. 
3	To import the **ESTD Report** file, right-click in the method report window, and select **Import Report** from the dropdown list.
4	The **Open Report Template File** window will display. Select **External Standard.srp** and click **Open** to load the template file. 

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Table 17-1 Customizing an external standard (ESTD) report (continued)

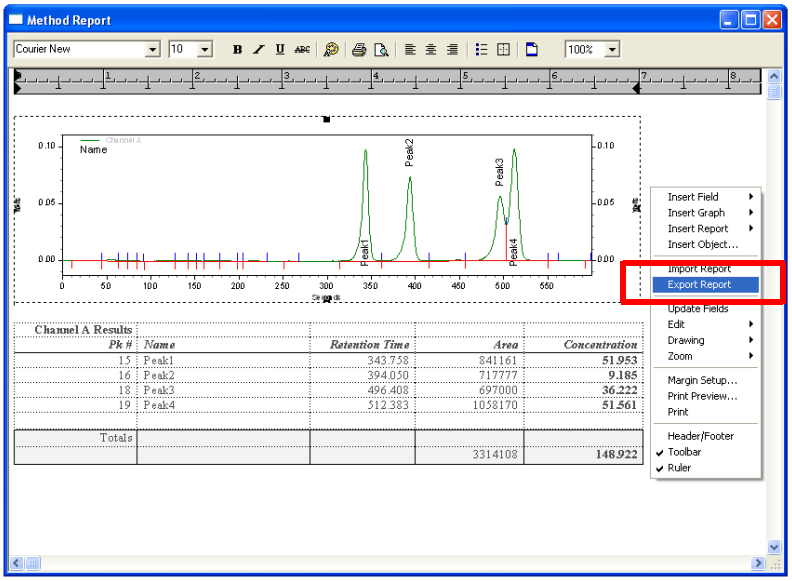
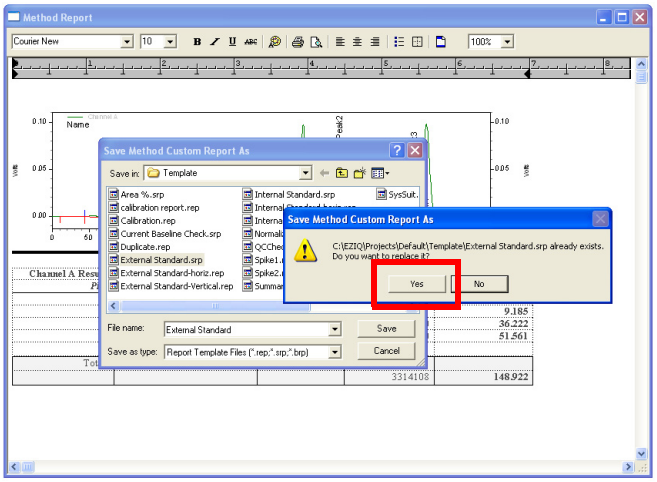
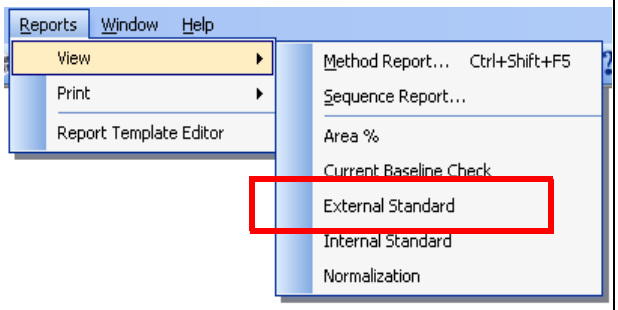
Step	Description
5	To edit the report, right-click and select options such as **Insert Field**, **Insert Graph**, **Insert Report**, and **Insert Object**.
6	Once all desired information has been modified or added, right click in the **Method Report** window and select **Export Report**. 
7	The **Save Method Custom Report As** window will open. Click **External Standard.srp**. Click **Save**. Click **Yes** to overwrite the current file. 

Table 17-1 Customizing an external standard (ESTD) report (continued)

Step	Description
8	To view the ESTD report, click **Reports >> View >> External Standard**. 
9	To print the ESTD Report, right-click in the Method Report window and select **Print** from the drop-down list.

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3000 Micro GC Guide 18
Changing a Standard Module

Table 18-1 Changing a standard module

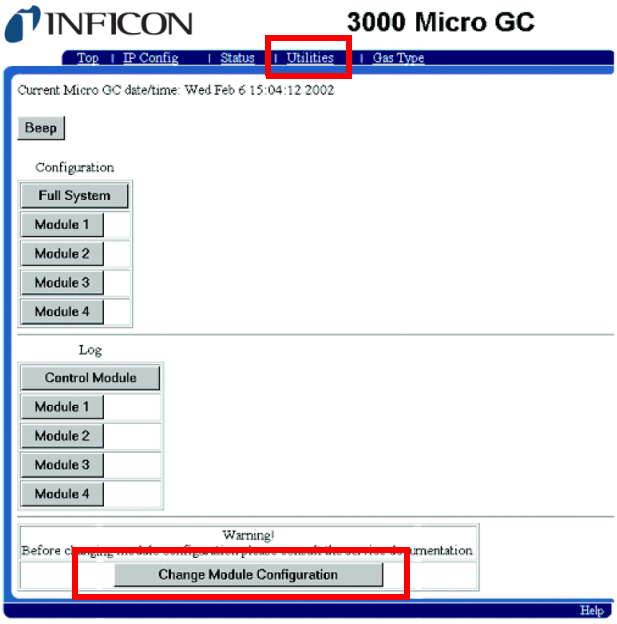
Step	Description
1	A Standard GC module must be decommissioned before it can be removed. 3000 Micro GC internally communicates to each installed GC module via a unique module address. For a 1-2 channel or portable instrument, the module addresses are 1 and 2. For a 3-4 channel instrument, the module addresses are 1, 2, 3 and 4. Decommissioning a Standard GC module will disable the GC module's address. Open the web browser and type the 3000 Micro GC IP Address in the address bar; press **Enter** to display the embedded web page. **NOTE:** At the factory, the instrument IP address is set to **10.1.1.101**.
2	Click the **Utilities** tab. Click **Change Module Configuration**.  **NOTE:** Two caution messages will display. Click **OK** on each to continue.

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Table 18-1 Changing a standard module (continued)

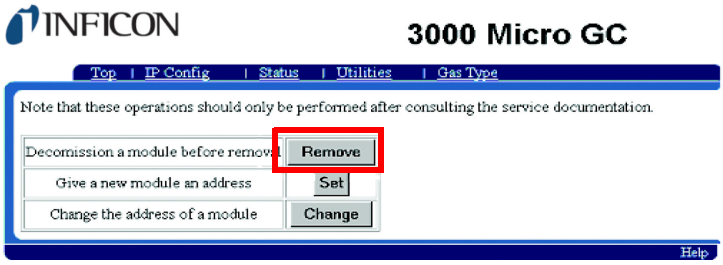
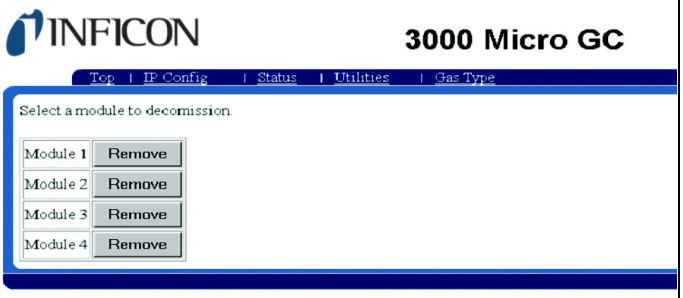
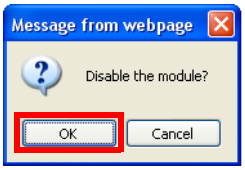
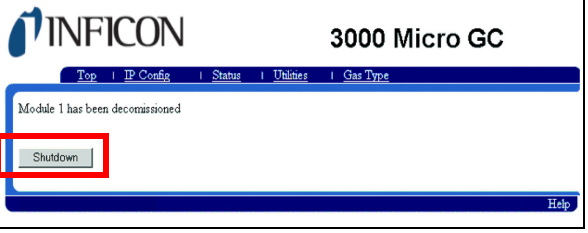
Step	Description
3	Click **Remove**. **NOTE:** Once a Standard GC module is decommissioned, it can not be used again until it is recommissioned. 
4	Click **Remove**, adjacent to the desired Standard GC module to be decommissioned.  A caution will display. Click **OK** to decommission the Standard GC module. 
5	Click **Shutdown** on the confirmation message to begin shutting down the instrument. 

Table 18-1 Changing a standard module (continued)

Step	Description
6	Do not turn off power. *Allow three minutes for the instrument to shut down.* A **The system is shutting down...** message will display. **CAUTION** **Do not turn off the power without waiting at least three minutes. 3000 Micro GC must update configuration files before power is turned off. If power is turned off too soon, the files could be corrupted, making 3000 Micro GC unusable.** 
7	Set the front panel power switch to the Off position.
8	Remove the two screws on each side of the top cover using a Torx T-20 or Phillips Head screwdriver. Lift and remove the top cover. **WARNING - Risk Of Electric Shock** **Electrostatic Discharge can damage electronic components. Wear a grounded wrist strap to avoid damaging 3000 Micro GC.** 

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Table 18-1 Changing a standard module (continued)

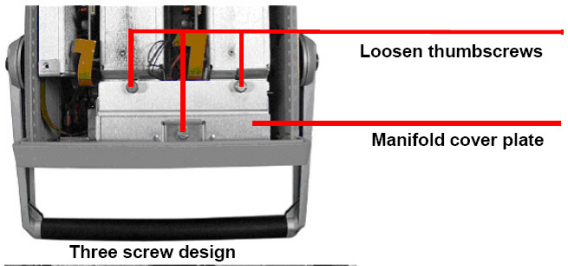
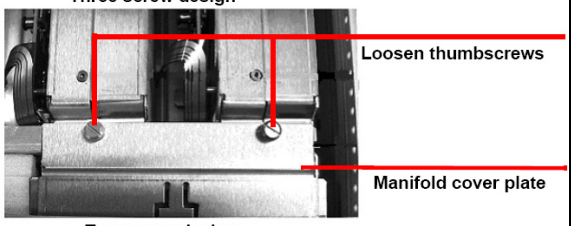
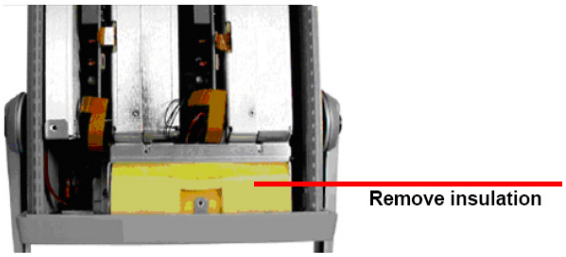
Step	Description
9	Loosen the thumbscrews in the manifold cover plate.  Three screw design  Two screw design
10	Remove the manifold cover plate. In the two screw design, slide the manifold cover plate towards the GC modules to disengage the hook in the cover plate from the tab in the chassis.
11	Carefully remove the manifold insulation and save it for reuse. **NOTE:** In the Portable 3000 Micro GC, the DC-DC converter assembly blocks access to the GC modules. Remove the screws that secure the DC-DC converter assembly to the side of the instrument. Without disconnecting any wires, slide the assembly off of the standoffs and gently lift it away from the GC modules.  **2-channel 3000 Micro GC shown** **Others are similar**

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Table 18-1 Changing a standard module (continued)

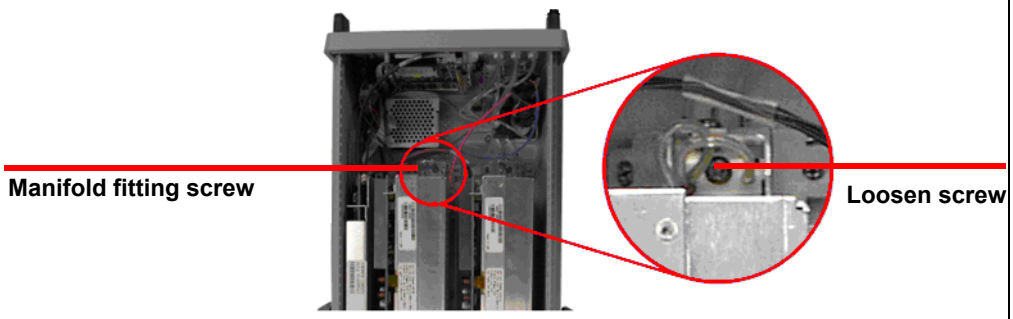
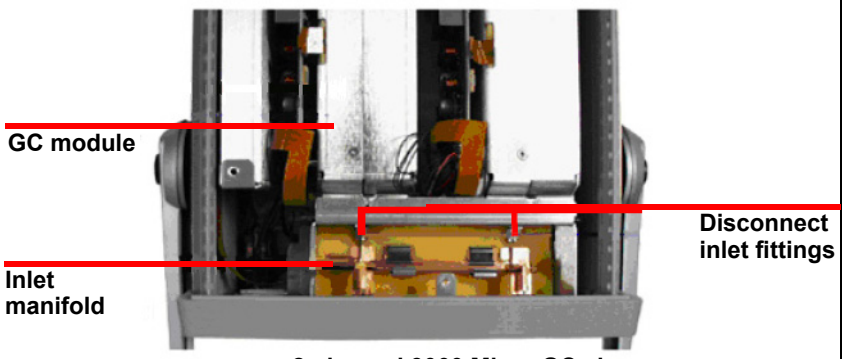
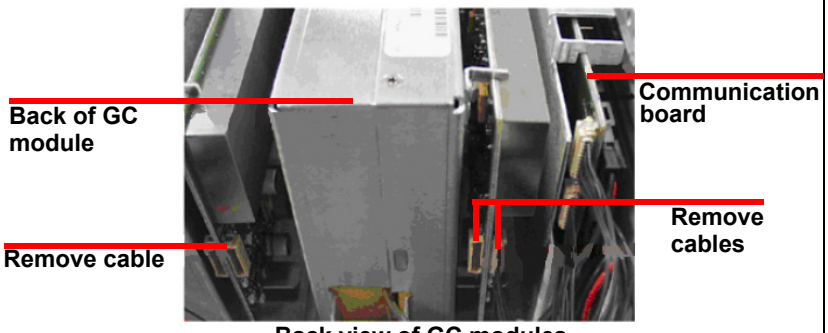
Step	Description
12	Use a T-20 screwdriver (PN 5182-3468) to loosen the screw in the inlet manifold fitting at the back of the GC module.  **2-channel 3000 Micro GC shown** **Others are similar**
13	Use a 1/4 in. open-ended wrench to diconnect the inlet manifold fitting from the GC module input fitting.  **2-channel 3000 Micro GC shown** **Others are similar**
14	Disconnect the communication cables leading from the GC modules (if connected) from the GC module communications board. Disconnect the power cables leading to the fan (if installed).  **Back view of GC modules**

Table 18-1 Changing a standard module (continued)

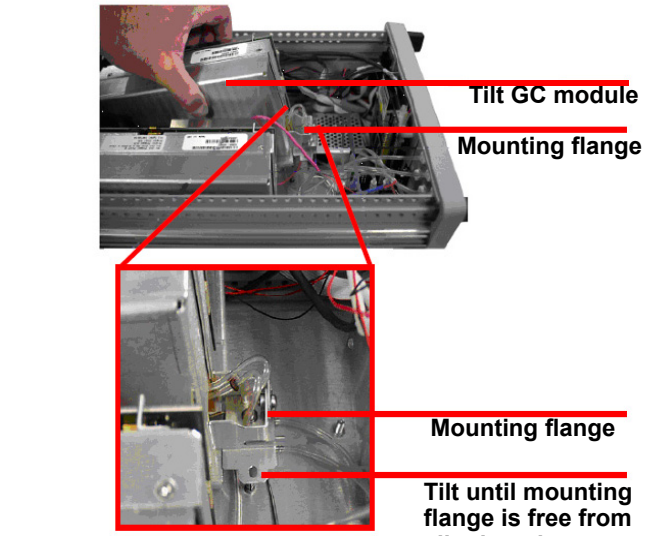
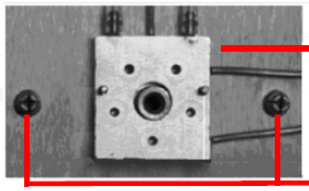
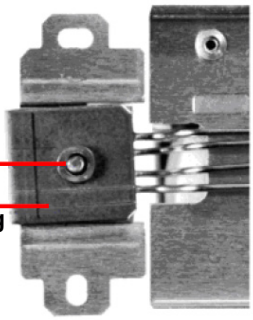
Step	Description
15	Tilt the back of the GC module up until the mounting flange clears the alignment pins. Slide the GC module towards the back of the instrument until it clears the inlet manifold frame and can be lifted and removed from the front.  **Tilt GC module** **Mounting flange** **Mounting flange** **Tilt until mounting flange is free from aligning pins** **2-channel 3000 Micro GC shown** **Others are similar**
16	Inspect the gang block fitting on the bottom of the chassis to make sure the mating surface is free of dust and particles.  **Gang block, lower half** **Alignment pins**
17	On the replacement module, remove the small metal plate covering the O-rings on the upper gang block.  **Retaining screw** **Metal plate covering O-rings and upper gang block**

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Table 18-1 Changing a standard module (continued)

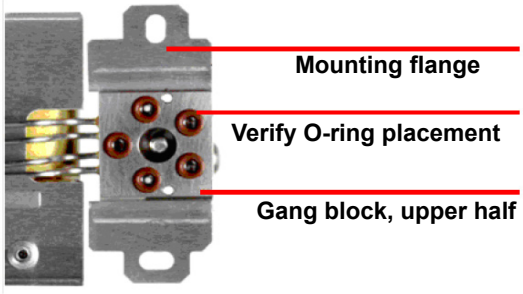
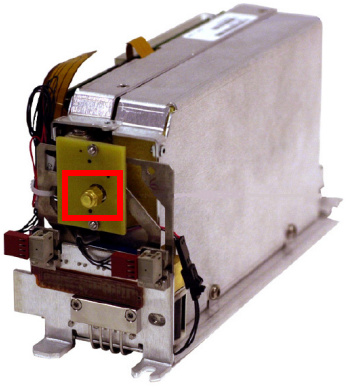
Step	Description
18	Inspect the GC module mounting flange fitting to verify all new O-rings on the replacement GC module are undamaged and seated flat. 
19	Use a wrench to loosen the protective 1/4 in. cap over the GC module inlet fitting. 

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Table 18-1 Changing a standard module (continued)

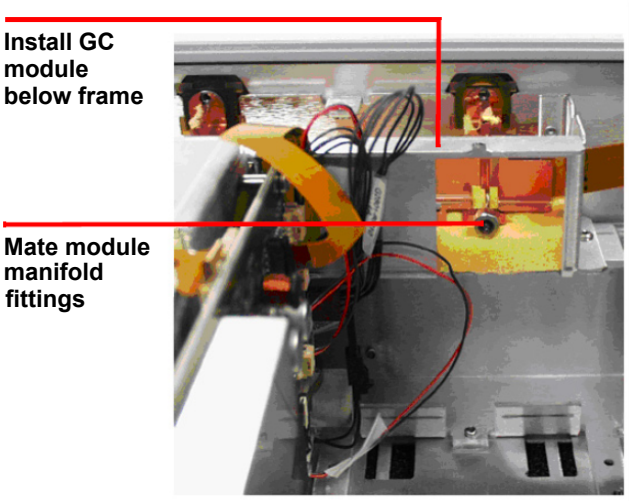
Step	Description
20	Lower the back of the GC module into position until there is enough clearance to position it into place under the lip of the inlet manifold frame. At the same time, ensure the GC module inlet fitting mates with the Swagelok® fitting in the 3000 Micro GC inlet manifold. Slide the GC module towards the front of 3000 Micro GC until it is fully seated into the Swagelok fitting in the 3000 Micro GC inlet manifold.  **Install GC module below frame** **Mate module manifold fittings** **View from back of 3000 Micro GC**

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Table 18-1 Changing a standard module (continued)

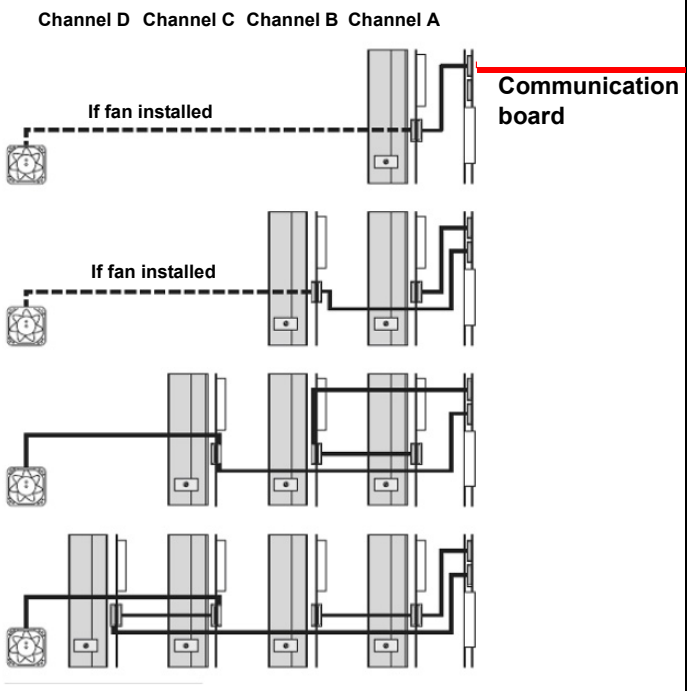
Step	Description
21	Re-connect the communications cables, as shown below. **NOTE:** Do not connect more than two GC modules in series per communications board connection. **NOTE:** The GC modules and communications board use parallel communications; both connectors on each item function similarly. 
22	Connect the inlet manifold to the GC module input fitting and tighten it finger tight. Use a 5/16 in. open-ended wrench totighten 1/4-turn past finger tight.
23	Tighten the screw in the mounting flange.
24	Carefully replace the inlet manifold insulation.
25	Install the manifold cover plate and the top cover.
26	For Standard GC modules, a new address must be given to the newly installed GC module. This can be done via the embedded web page. Turn the 3000 Micro GC power switch, located on its front, to the **On** position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load. **CAUTION** **Allow three minutes for 3000 Micro GC to update configuration files.**

Table 18-1 Changing a standard module (continued)

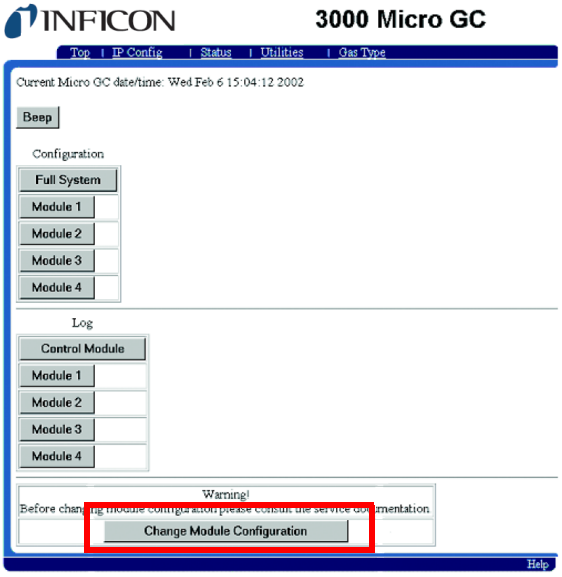
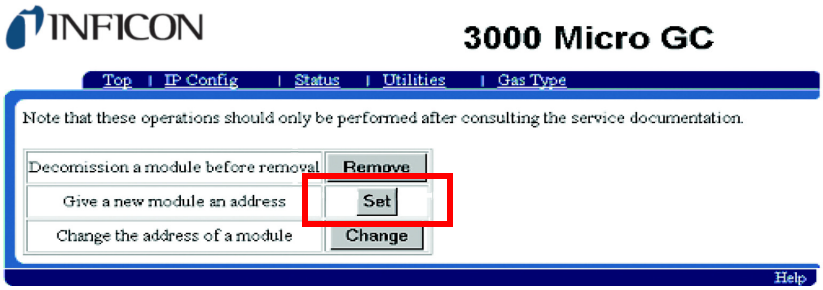
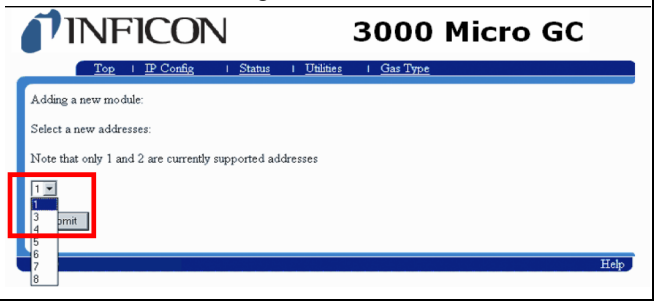
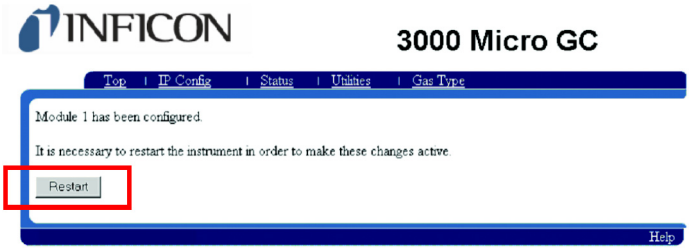
Step	Description
27	In the web browser address bar, type the instrument IP address.
28	Click the **Utilities** tab.
29	Click **Change Module Configuration**. 
30	Click **Set**. 
31	Use the drop-down list on the lower left portion of the screen to select the correct physical address for the new standard GC module. Each physical address corresponds to a channel number. Valid 3000 Micro GC physical addresses are **1** through **4**. 

Table 18-1 Changing a standard module (continued)

Step	Description
32	After selecting the address, click **Restart**. 
33	A **The system is shutting down...** message is displayed. *Allow three minutes for the instrument to update configuration files.* **CAUTION** **Do not turn off the power without waiting at least three minutes. 3000 Micro GC must update configuration files before power is turned off. If power is turned off too soon, the files could be corrupted and render 3000 Micro GC unusable.** 
34	Open the web browser and type the 3000 Micro GC IP Address in the address bar. Verify that the recently installed replacement module is available in the module list.
35	Once the replacement standard module is installed, update EZ IQ with the revised 3000 Micro GC hardware configuration. For detailed instructions on how to configure EZ IQ, see 074-537 EZ IQ Installation Guide.

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3000 Micro GC Guide 19
Changing a Performance Enhanced Module

Table 19-1 Changing a Performance Enhanced module

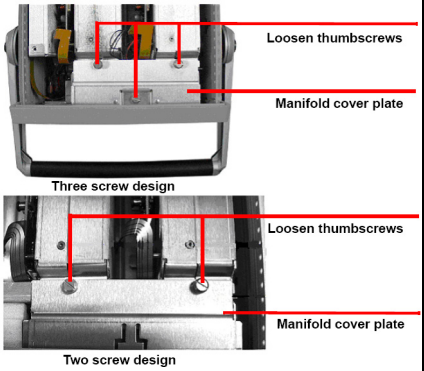
Step	Description
1	To replace a Performance Enhanced module with another Performance Enhanced module, turn of the instrument by setting the front panel power switch to the Off position. Remove the two screws on each side of the top cover using a Torx T-20 or Phillips Head screwdriver. Lift and remove the top cover. **WARNING - Risk Of Electric Shock** **Electrostatic Discharge can damage electronic components. Wear a grounded wrist strap to avoid damaging 3000 Micro GC.** 
2	Loosen the thumbscrews in the manifold cover plate. 
3	Remove the manifold cover plate. Slide the manifold cover plate towards the GC module to disengage the hook in the cover plate from the tab in the chassis.

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Table 19-1 Changing a Performance Enhanced module (continued)

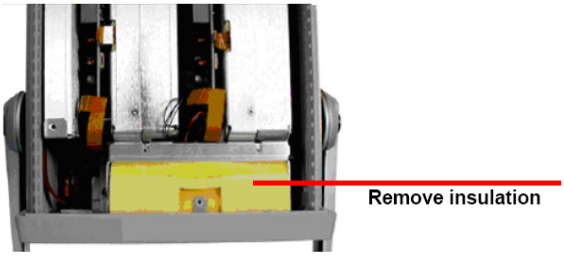
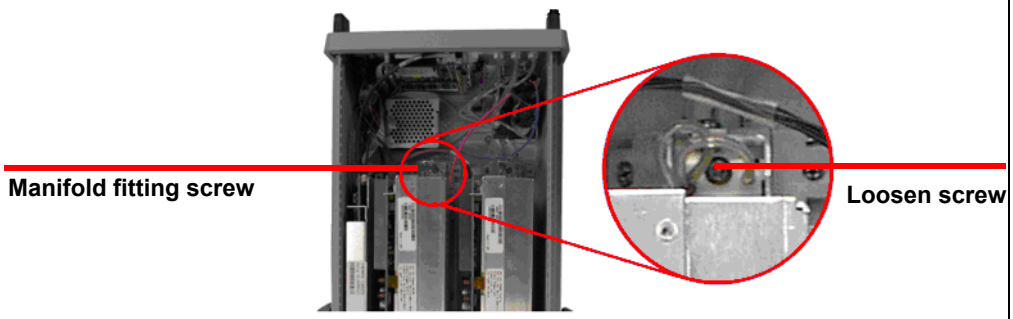
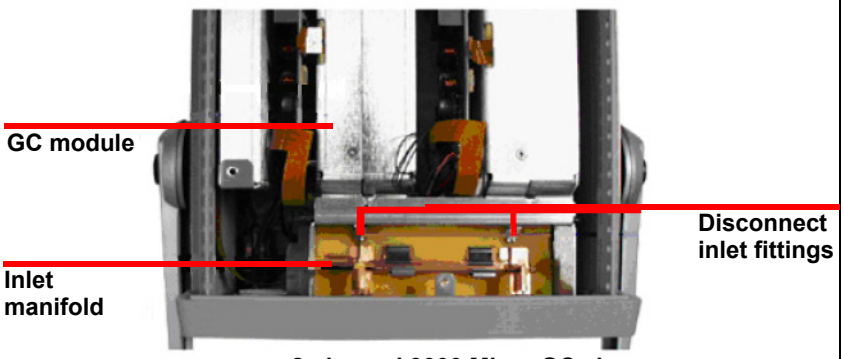
Step	Description
4	Carefully remove the manifold insulation. Save for reuse. **NOTE:** In the Portable 3000 Micro GC, the DC-DC converter assembly blocks access to the GC modules. Remove the screws that secure the DC-DC converter assembly to the side of the instrument. Without disconnecting any wires, slide the assembly off of the standoffs and gently lift it away from the GC modules.  **Remove insulation** **2-channel 3000 Micro GC shown** **Others are similar**
5	Use a T-20 screwdriver to loosen the screw in the inlet manifold fitting at the back of the GC module.  **Manifold fitting screw** **Loosen screw** **2-channel 3000 Micro GC shown**
6	Use a 1/4 in. open-ended wrench to disconnect the inlet manifold fitting from the GC module input fitting.  **GC module** **Disconnect inlet fittings** **Inlet manifold** **2-channel 3000 Micro GC shown** **Others are similar**

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Table 19-1 Changing a Performance Enhanced module (continued)

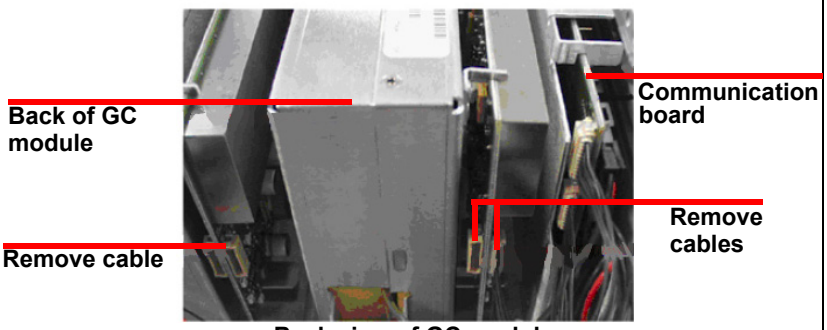
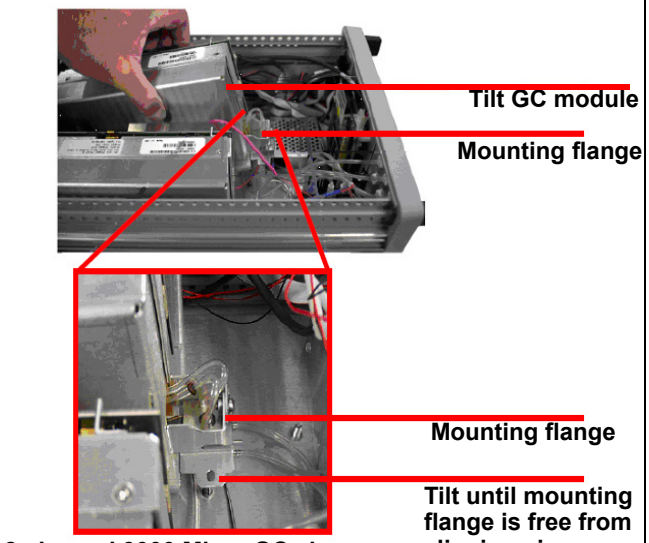
Step	Description
7	Disconnect the communication cables leading from the GC modules, if present, to the communications board connectors for the GC modules. If needed, also disconnect the power cables leading to the fan.  **Back view of GC modules**
8	 **2-channel 3000 Micro GC shown** **Others are similar** Tilt the back of the GC module up until the mounting flange clears the alignment pins. Slide the GC module towards the back of the instrument until it clears the inlet manifold frame and can be lifted and removed from the front.
9	Inspect the gang block fitting on the bottom of the chassis to ensure the mating surface is clean. 

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Table 19-1 Changing a Performance Enhanced module (continued)

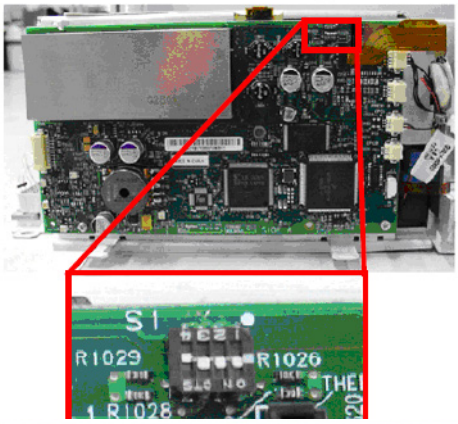
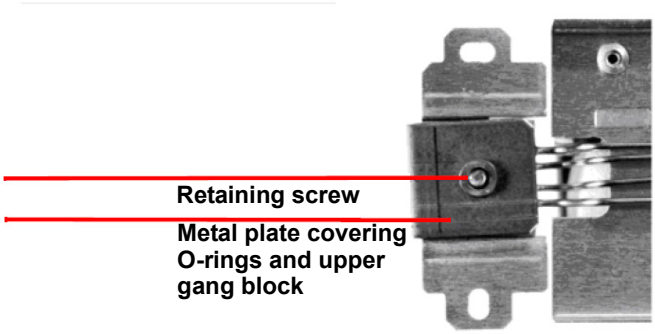
Step	Description
10	On the replacement module, set the Performance Enhanced GC module address by setting the DIP switch on the upper right of the D-board to the appropriate configuration. Each setting determines a unique module address. Please refer to the label on the top of the module. The **DEF** setting is the factory default DIP switch setting.  
11	Remove the small metal plate covering the O-rings on the upper gang block. 

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Table 19-1 Changing a Performance Enhanced module (continued)

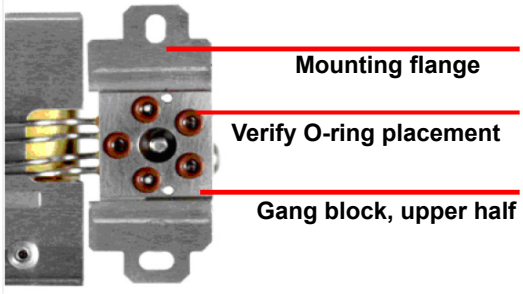
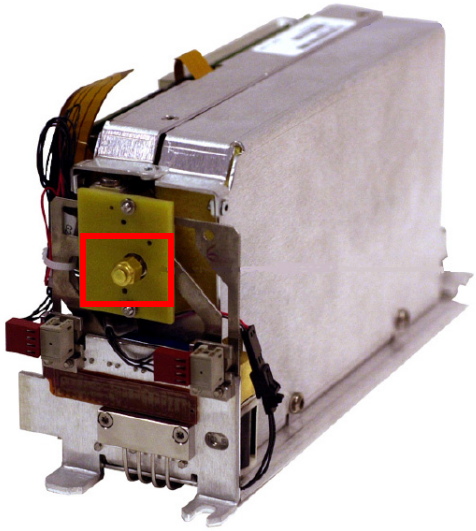
Step	Description
12	Inspect the GC module mounting flange fitting to verify all new O-rings on the replacement GC module are undamaged and seated flat. 
13	Remove the protective 1/4 in. cap over the GC module inlet fitting. 

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Table 19-1 Changing a Performance Enhanced module (continued)

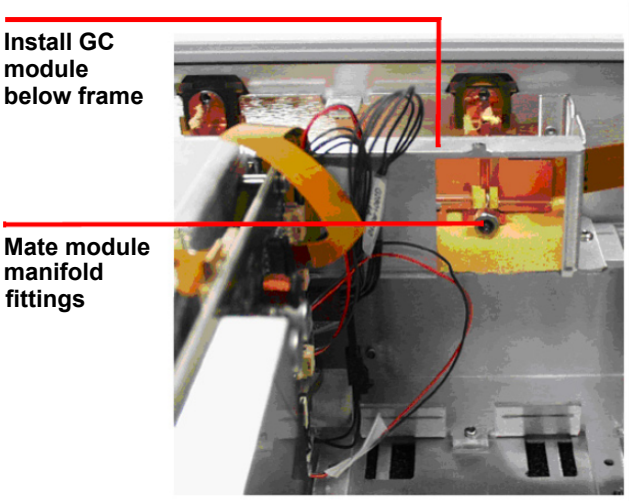
Step	Description
14	Lower the back of the GC module into position until there is enough clearance to position it into place under the lip of the inlet manifold frame. At the same time, ensure the GC module inlet fitting mates with the Swagelok fitting in the 3000 Micro GC inlet manifold. Slide the GC module towards the front of 3000 Micro GC until it is fully seated into the Swagelok fitting in the 3000 Micro GC inlet manifold.  **Install GC module below frame** **Mate module manifold fittings** **View from back of 3000 Micro GC**

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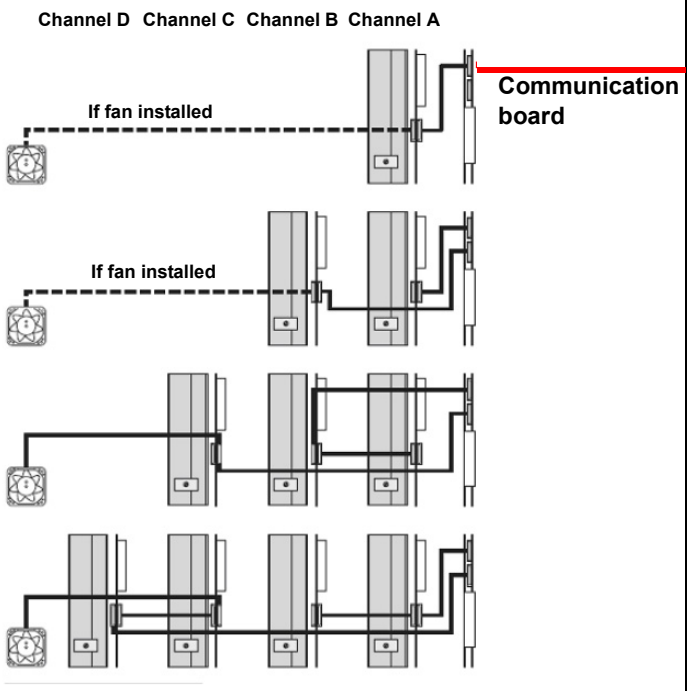
Table 19-1 Changing a Performance Enhanced module (continued)

Step	Description
15	Re-connect the communications cables. **NOTE:** Do not connect more than two GC modules in series per communications board connection. **NOTE:** The GC modules and communications board use parallel communications; both connectors on each item function similarly. 
16	Connect the inlet manifold to the GC module input fitting and tighten it finger tight. Use a 5/16 in. open-ended wrench, to tighten 1/4-turn past finger tight.
17	Tighten the screw in the mounting flange.
18	Carefully replace the inlet manifold insulation.
19	Install the manifold cover plate and the top cover.
20	Turn the 3000 Micro GC power switch, located on its front, to the on position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load.
21	Open the web browser and type the 3000 Micro GC IP Address in the address bar. Verify that the newly installed replacement module is available in the module list.
22	Once the replacement GC module is installed, update EZ IQ with the updated 3000 Micro GC hardware configuration. For detailed instructions on how to configure EZ IQ, consult the PN 074-537-P1A EZ IQ Installation Guide.

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3000 Micro GC Guide 20
Replacing a Standard Module with a Performance Enhanced Module

Table 20-1 Changing a standard module

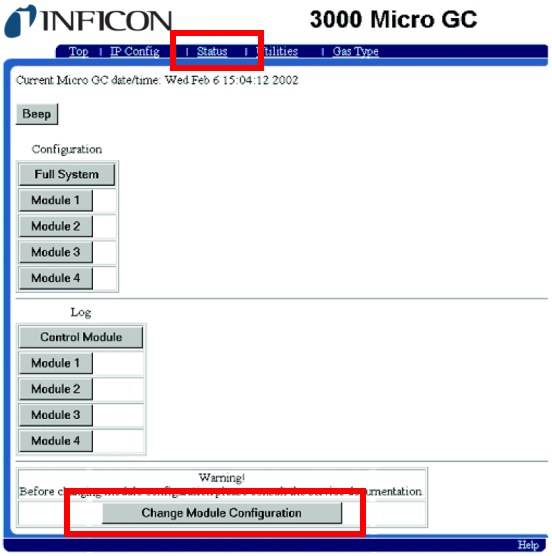
Step	Description
1	A Standard GC module must be decommissioned before it can be removed. 3000 Micro GC internally communicates to each installed GC module using a unique module address. For a 1-2 channel or portable instrument, the module addresses are 1 and 2. For a 3-4 channel instrument, the module addresses are 1, 2, 3 and 4. Decommissioning a Standard GC module will disable the GC module's address. Open the web browser and type the 3000 Micro GC IP Address in the address bar, then press **Enter** to display the embedded web page. **NOTE:** At the factory, the instrument IP address is set to **10.1.1.101**.
2	Click the **Utilities** tab. Click **Change Module Configuration**. 
3	Two caution messages will display. Click **OK** on each to continue.

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Table 20-1 Changing a standard module (continued)

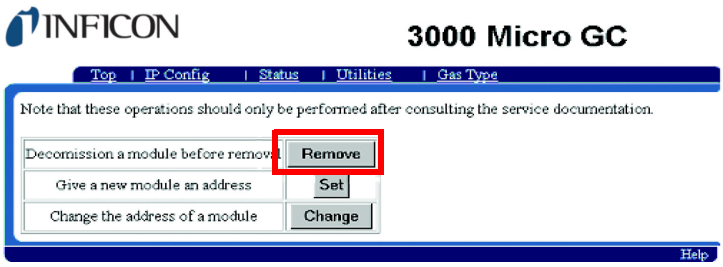
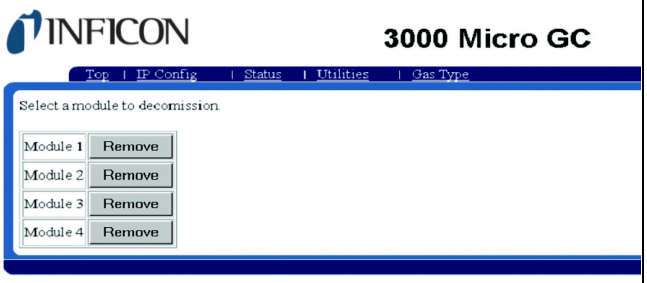
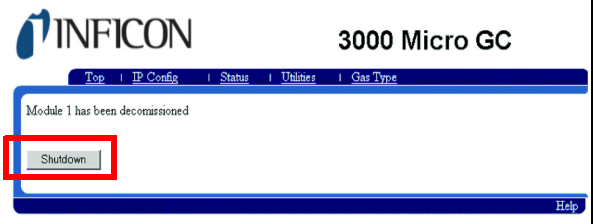
Step	Description
4	Click **Remove**. **NOTE:** Once a Standard GC module is decommissioned, it cannot be used until it is recommissioned. 
5	Click **Remove** next to the Standard GC module to decommission. A caution will display. Click **OK** to decommission the Standard GC module. 
6	Click **Shutdown** on the confirmation message. Allow three minutes for the instrument to shut down. 
7	Set the front panel power switch to the **Off** position.

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Table 20-1 Changing a standard module (continued)

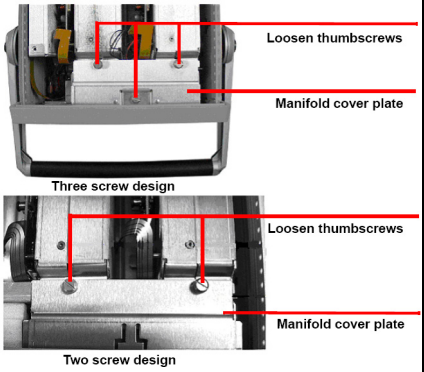
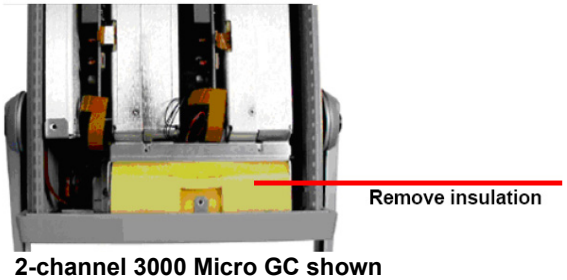
Step	Description
8	Remove the two screws on each side of the top cover using a Torx T-20 or Phillips Head screwdriver. Lift and remove the top cover. **WARNING - Risk Of Electric Shock** **Electrostatic Discharge can damage electronic components. Wear a grounded wrist strap to avoid damaging 3000 Micro GC.** 
9	Loosen the thumbscrews in the manifold cover plate. 
10	Remove the manifold cover plate. In the two screw design, slide the manifold cover plate towards the GC module to disengage the hook in the cover plate from the tab in the chassis.
11	Carefully remove the manifold insulation. Save it for reuse. **NOTE:** In the Portable 3000 Micro GC, the DC-DC converter assembly blocks access to the GC modules. Remove the screws that secure the DC-DC converter assembly to the side of the instrument. Without disconnecting any wires, slide the assembly off of the standoffs and gently lift it away from the GC modules.  **2-channel 3000 Micro GC shown** **Others are similar**

Table 20-1 Changing a standard module (continued)

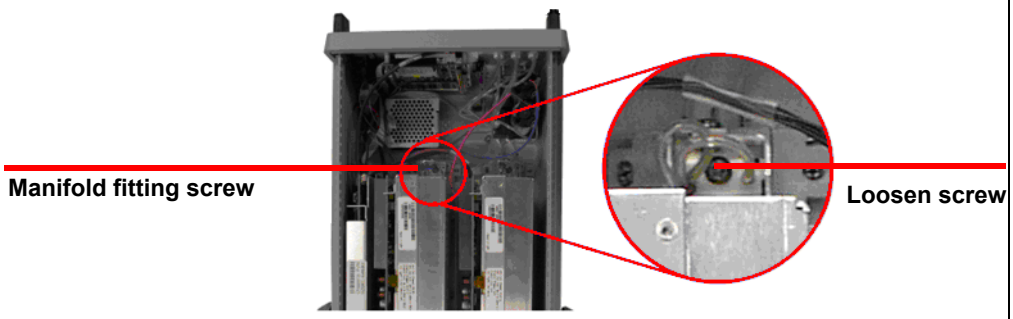
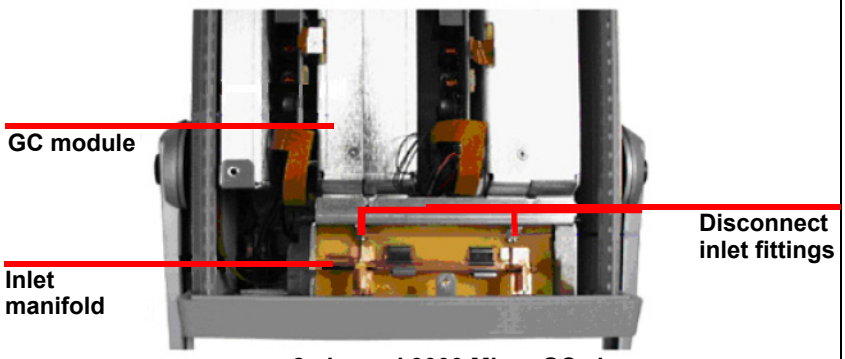
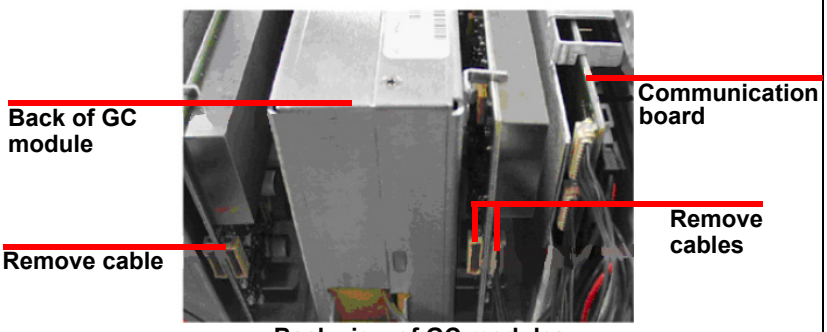
Step	Description
12	Use a T-20 screwdriver to loosen the screw in the inlet manifold fitting at the back of the GC module.  **2-channel 3000 Micro GC shown**
13	Use a 1/4 in. open-ended wrench to disconnect the inlet manifold fitting from the GC module input fitting.  **2-channel 3000 Micro GC shown Others are similar**
14	Disconnect the communication cables leading from the GC modules, if present, to the communications board connectors for the GC modules. If needed, also disconnect the power cables leading to the fan.  **Back view of GC modules**

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Table 20-1 Changing a standard module (continued)

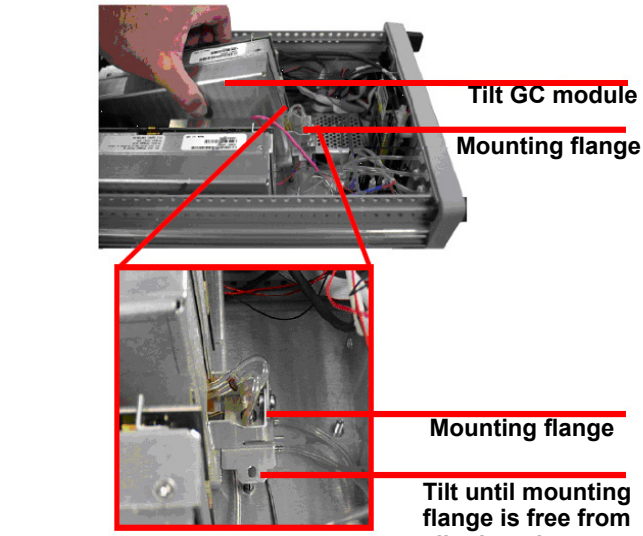
Step	Description
15	Tilt the back of the GC module up until the mounting flange clears the alignment pins. Slide the GC module towards the back of the instrument until it clears the inlet manifold frame and can be lifted and removed from the front.  **2-channel 3000 Micro GC shown** **Others are similar**
16	Inspect the gang block fitting on the bottom of the chassis to make sure the mating surface is free of dust and particles. 

Table 20-1 Changing a standard module (continued)

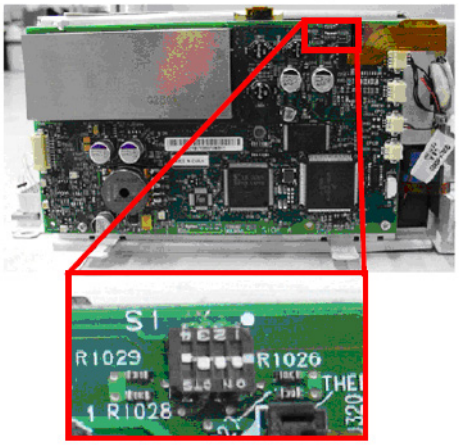
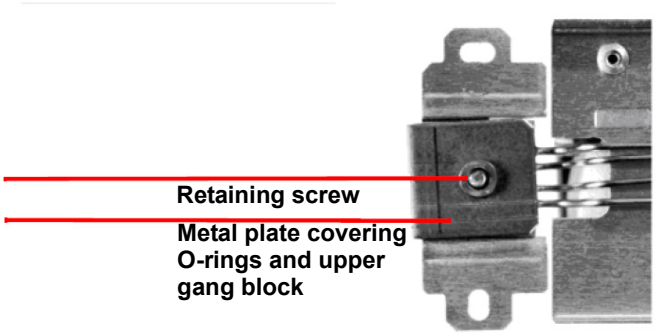
Step	Description
17	On the new module, set the Performance Enhanced GC module address by setting the DIP switch on the upper right of the D-board to the appropriate configuration. Each setting determines a unique module address. Please refer to the label on the top of the module. The **DEF** setting is the factory default DIP switch setting.  
18	Remove the small metal plate covering the O-rings on the upper gang block. 

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Table 20-1 Changing a standard module (continued)

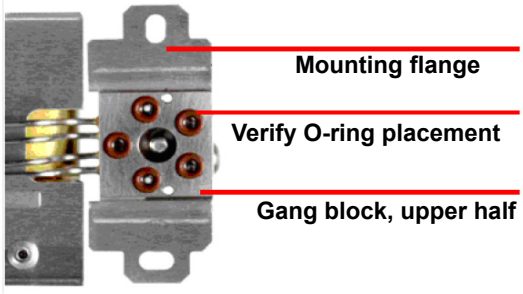
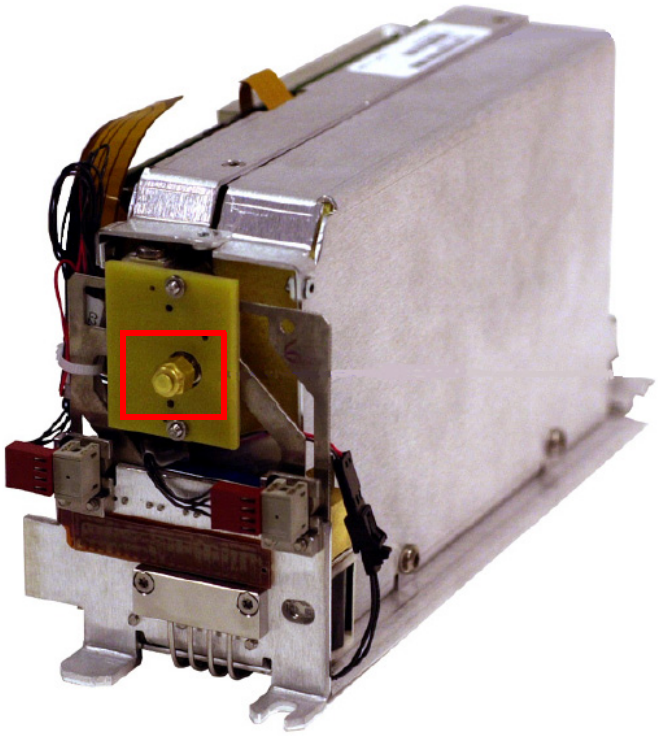
Step	Description
19	Inspect the GC module mounting flange fitting to verify all new O-rings on the replacement GC module are undamaged and seated flat. 
20	Remove the protective 1/4 in. cap over the GC module inlet fitting. 

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Table 20-1 Changing a standard module (continued)

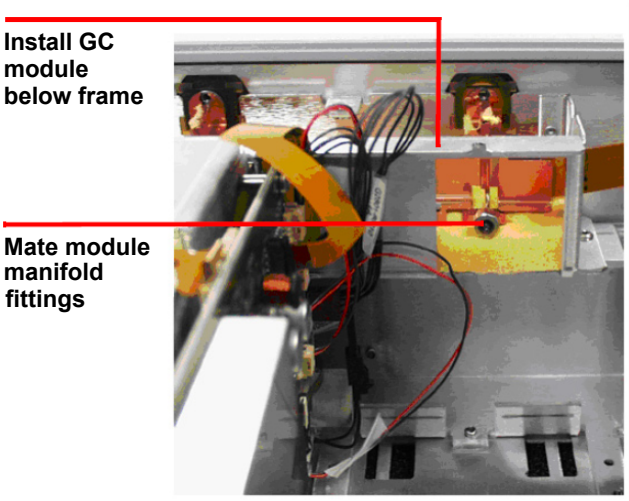
Step	Description
21	Lower the back of the GC module into position until there is enough clearance to position it into place under the lip of the inlet manifold frame. At the same time, ensure the GC module inlet fitting mates with the Swagelok fitting in the 3000 Micro GC inlet manifold. Slide the GC module towards the front of the 3000 Micro GC until it is fully seated into the Swagelok fitting in the 3000 Micro GC inlet manifold.  **Install GC module below frame** **Mate module manifold fittings** **View from back of 3000 Micro GC**

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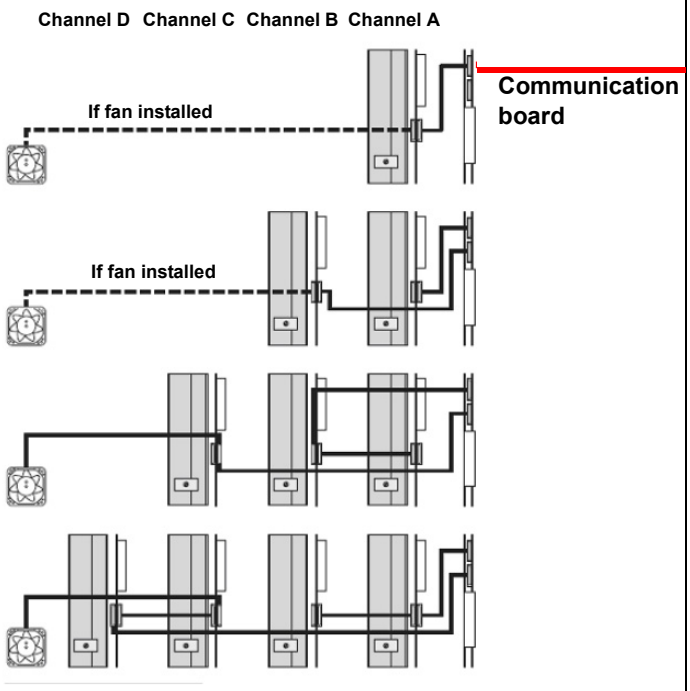
Table 20-1 Changing a standard module (continued)

Step	Description
22	Re-connect the communications cables. **NOTE:** Do not connect more than two GC modules in series per communications board connection. **NOTE:** The GC modules and communications board use parallel communications; both connectors on each item function similarly. 
23	Connect the inlet manifold to the GC module input fitting and tighten it finger tight. Using a 5/16 in. open-ended wrench, tighten 1/4-turn past finger tight.
24	Tighten the screw in the mounting flange.
25	Carefully replace the inlet manifold insulation.
26	Install the manifold cover plate and the top cover.
27	Turn the 3000 Micro GC power switch, located on its front, to the on position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load.
28	Open the web browser and type the 3000 Micro GC IP Address in the address bar. Verify that the recently installed replacement module is available in the module list.
29	After installing the replacement GC module, update EZ IQ with the updated 3000 Micro GC hardware configuration. For detailed instructions on how to configure EZ IQ, consult the PN 074-537 EZ IQ Installation Guide.

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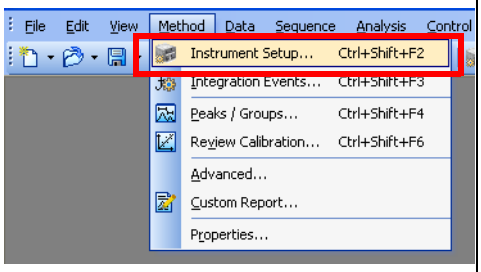
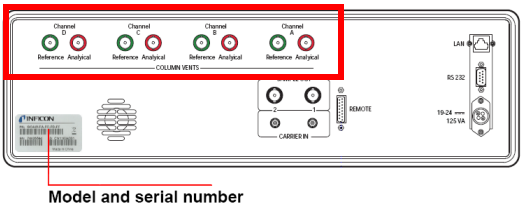
3000 Micro GC Guide 21
Testing Instrument Flow Rates

Table 21-1 Test instrument flow rates

Step	Description
1	Instrument flow rates can be tested for diagnostic purposes. Prior to testing, create a test method in **EZ IQ.** Click **File >> Method >> Create**.
2	Click **Method >> Instrument Setup**. 
3	In the **Instrument Setup** window, set the **Column Head Pressure** and **Post Column Pressure** to **20 PSI**.
4	Download the method by clicking **Control >> Download**.
5	Using a flowmeter, measure the flow rates from the **Analytical** and **Reference** column vents, located on the back of 3000 Micro GC. Male luer locks are provided in the instrument ship kit. The female end will attach directly onto the column vents. The ship kit also contains a 1/16 in. piece of polyurethane tubing, which can be attached to the male end. **Analytical** flow rate should be 1.0 +/- 0.5 mL/min. **Reference** flow rate should be 0.6 +/- 0.4 mL/min. **NOTE:** Flow rates will vary depending on column length, internal diameter, and film thickness. 
6	If no flowmeter is available, a rudimentary test can be performed to verify the presence of flow: ***1*** Attach a male luer lock to the piece of 1/16 inch polyurethane tubing, provided in the instrument shipping kit. ***2*** Attach the female end of the luer lock to one of the column vents on the back of the instrument. Set the open end of the tubing in a container of water. Bubbles indicate flow.
3	If threre is no flow from either or both the **Analytical** and **Reference** ports, contact INFICON.

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3000 Micro GC Guide 22
Installing the Digital I/O Module

Table 22-1 Installing the digital I/O module

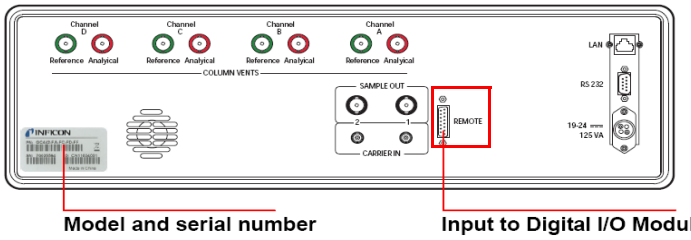
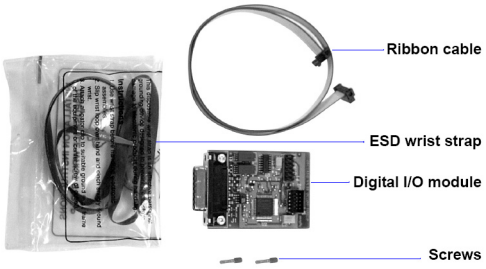
Step	Description
1	For some applications, an external triggering device may be required for sampling. Install the Digital I/O Module (PN G2847A) in 3000 Micro GC and connect it to the external triggering device via a Remote Start Cable (PN G2801-60618). **NOTE:** A 4-channel 3000 Micro GC is displayed below. 
2	The digital I/O kit contains the following items: 
3	The following tools are required to install the digital I/O module (not provided): • Torx T-10 driver • Torx T-20 screwdriver driver • Needle nose pliers (helpful for disconnecting cables) • Phillips Head Screwdriver • Flat-bladed screwdriver

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Table 22-1 Installing the digital I/O module (continued)

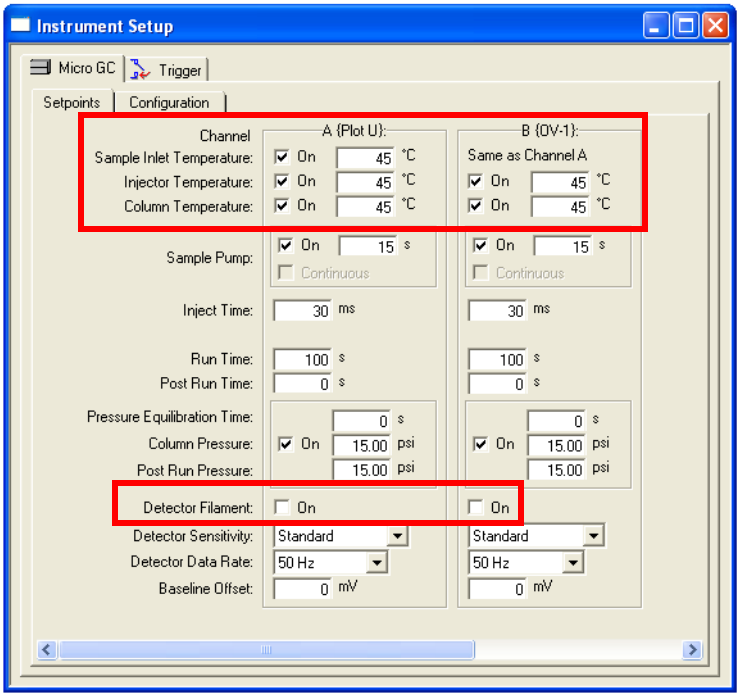
Step	Description
4	Before installing the digital I/O module, prepare the instrument for service. Lower the heated inlets, injectors, and columns to 45°C. Clear **Detector Filament:** to turn off the detectors. 
5	Download the method from EZ IQ onto 3000 Micro GC. Check the EZ IQ **Instrument Status** screen by clicking **Control >> Instrument Status**. Wait until the method setpoints are reached (i.e., the instrument is in the **Ready** state).
6	Exit EZ IQ.
7	Set the front panel power switch to the off position. Disconnect the 3000 Micro GC power supply from the back of the instrument. **WARNING** **During this process, the 3000 Micro GC internal components will be exposed. To avoid damaging 3000 Micro GC, turn the power switch off and disconnect all external power to 3000 Micro GC.**

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Table 22-1 Installing the digital I/O module (continued)

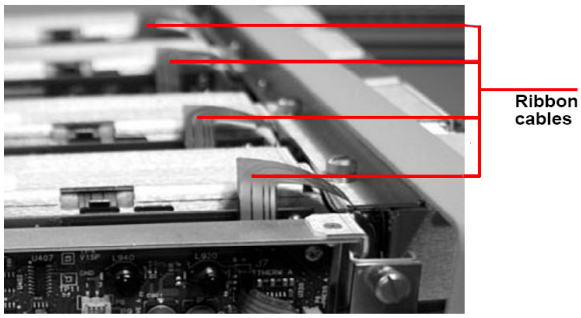
Step	Description
8	Remove the two screws on each side of the top cover using a Torx T-20 or Phillips Head screwdriver. Lift and remove the top cover. **WARNING - Risk Of Electric Shock** **Electrostatic Discharge can damage electronic components. Wear a grounded wrist strap to avoid damaging 3000 Micro GC.** 
9	Unscrew and remove the four black feet from the back panel using a Torx 20 screwdriver. Retain the screws for reassembly. Carefully slide the main chassis out of the back of the 3000 Micro GC until the communication board is exposed. **CAUTION** **Do not damage the ribbon cable near the upper side portion of each module.** 
10	If removing a digital I/O module, refer to step 11. If installing a digital I/O module, follow steps 13 through 23.

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Table 22-1 Installing the digital I/O module (continued)

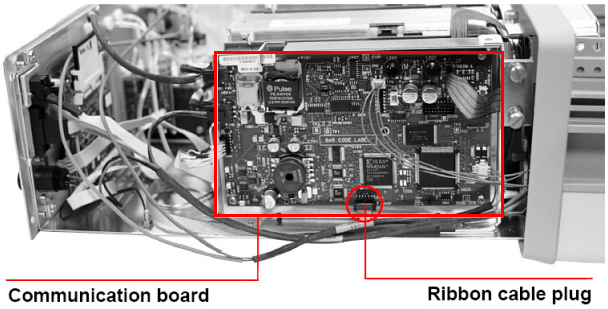
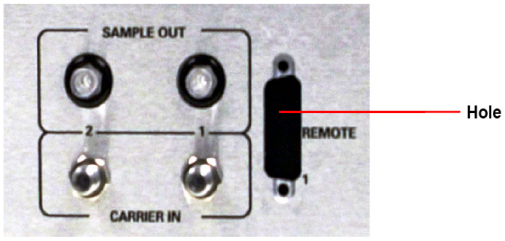
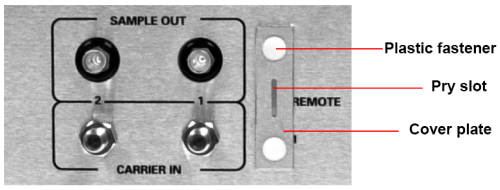
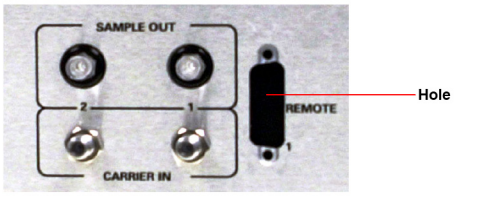
Step	Description
11	Disconnect the ribbon cable from the communication board. 
12	Remove the two screws fastening the module to the back panel. Retain the screws for later use. Remove the digital I/O module and ribbon cable. 
13	To install a digital I/O module, use a flat-head screwdriver to pry the cover plate off the instrument's back panel.  
14	Slide the new Digital I/O Module through the hole in the back panel so that the two threaded studs protrude through. Use the retained screws to secure it in place.

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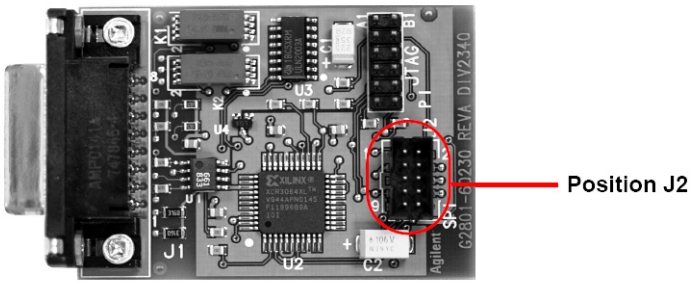
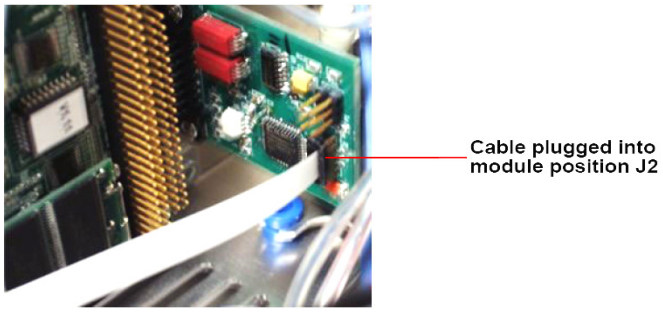
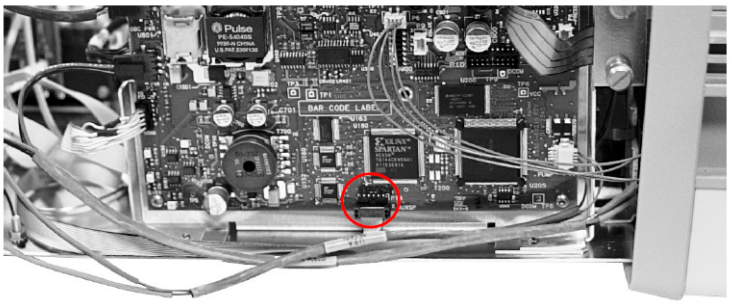
Table 22-1 Installing the digital I/O module (continued)

Step	Description
15	Attach one end of the ribbon cable to digital I/O module position J2.  
16	Attach the other end of the cable to the communication board at position P14. 
17	Carefully slide the chassis back into the instrument. Take care not to damage any wiring or cables. Use the retained screws to reassemble the top cover. Attach all feet.
18	Turn the 3000 Micro GC power switch, located on its front, to the **On** position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load.
19	Refer to the 074-519 3000 Micro GC Operating Manual for details on how to use the digital I/O module.

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3000 Micro GC Guide 23 Replacing the Battery Cable Fuse on a Portable Instrument

Table 23-1 Replacing the battery cable fuse on a portable instrument

Step	Description
1	Before beginning work on an instrument, use EZ IQ software to prepare the instrument for service. Lower the heated inlets, injectors, and columns to 45°C. Turn off the **Detector Filaments**.
2	Download the method from EZ IQ onto 3000 Micro GC. Check the EZ IQ **Instrument Status** screen by clicking **Control >> Instrument Status**. Wait until the method setpoints are reached (i.e., the instrument is in the **Ready** state).
3	Shut down EZ IQ.
4	Set the front panel power switch to the **Off** position. Disconnect the 3000 Micro GC power supply from the back of the instrument. **WARNING** **During this process, the 3000 Micro GC internal components will be exposed. To avoid damaging 3000 Micro GC, turn the power switch off and disconnect all external power to 3000 Micro GC.**
5	Remove the two screws on each side of the top cover, using a Torx T-20 screwdriver or a Phillips Head screwdriver. Lift and remove the top cover. **WARNING - Risk Of Electric Shock** **Electrostatic Discharge can damage electronic components. Wear a grounded wrist strap to avoid damaging 3000 Micro GC.** 

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Table 23-1 Replacing the battery cable fuse on a portable instrument (continued)

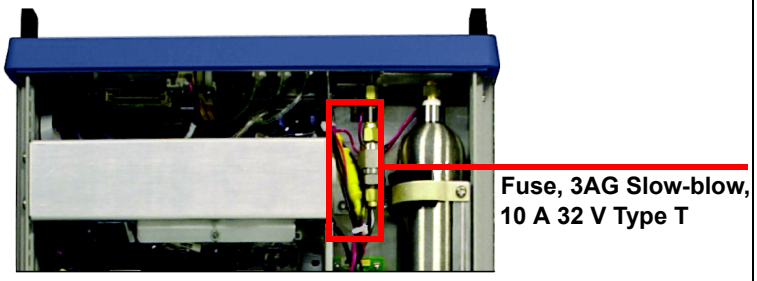
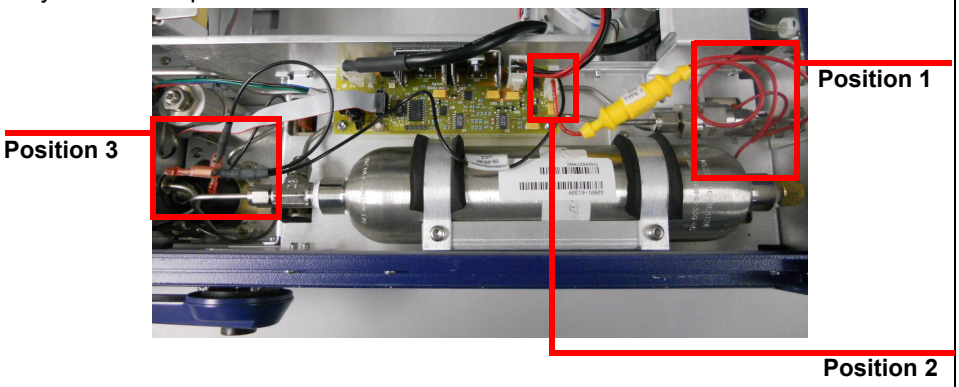
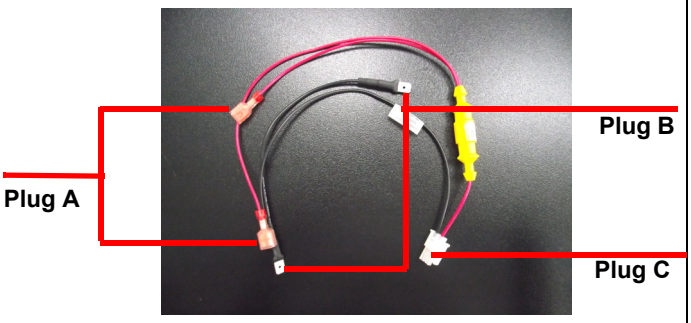
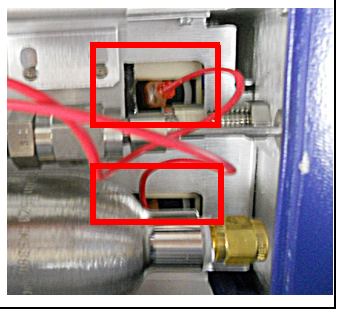
Step	Description
6	Locate the battery cable fuse. 
7	Locate the battery cable fuse positions. 
8	Disconnect the battery cable fuse connectors in Position 1, Position 2, and Position 3.
9	Remove the used battery cable fuse. Locate Plug A, Plug B, and Plug C. **NOTE:** The battery cable fuse contains two Plug A connectors, two Plug B connectors, and one Plug C connector. 
10	On the replacement battery cable fuse, connect both Plug A connectors to Position 1. 

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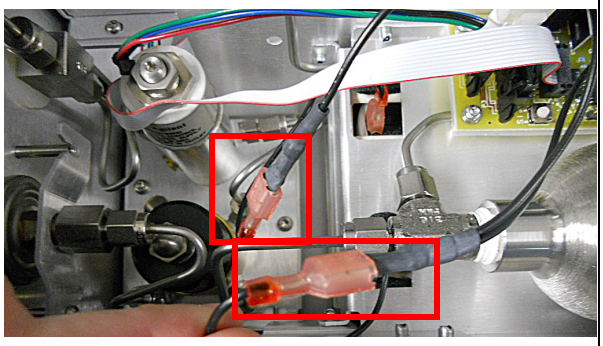
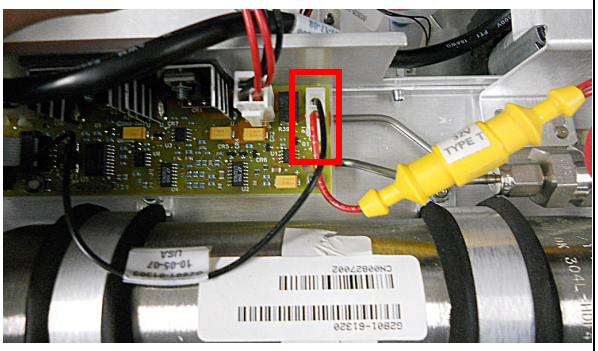
Table 23-1 Replacing the battery cable fuse on a portable instrument (continued)

Step	Description
11	Next, connect both Plug B connectors to Position 3. 
12	Connect the Plug C connector to Position 2. 
13	Install the top cover of 3000 Micro GC.
14	Turn the 3000 Micro GC power switch, located on its front, to the on position. The switch will illuminate green to indicate that 3000 Micro GC is on. Wait three minutes for the instrument to load.

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