User's Guide

TRILUTION® LC Software

GILSON®

Trademarks

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TRILUTION® LC SOFTWARE OVERVIEW

TRILUTION® LC is software for controlling high-pressure liquid chromatography systems and automated liquid handling instruments. TRILUTION LC provides fraction collection capabilities, including collection by slope, level, time, and/or volume, conditional logic collection, the ability to couple multiple fraction collectors for increased bed capacity, and automatic sample list generation of collected fractions for post-collection processing.

The TRILUTION LC interface features graphical gradient creation and adjustments, click-and-drag icon-based tasks, and graphical method optimization. Time variables for universal method creation, in addition to an intuitive sample list, make TRILUTION LC a truly user-friendly software package. Graphical custom task creation and rack creation allow for the flexibility and functionality to meet demanding application requirements.

Click the links for descriptions of the two main menus: **Liquid Chromatography Menu on page 18** and **Administrative Tools Menu on page 22**.

Customer Service

Gilson and its worldwide network of representatives provide customers with the following types of assistance: sales, technical support, applications, and instrument repair.

If you need assistance, please visit **www.gilson.com/contact.html** for contact options.

Before Calling Us

Your local Gilson representative will serve you more efficiently if you have the following information:

- serial number and model number of the instruments involved
- installation procedure you used
- list of concise symptoms
- list of operating procedures and conditions you were using when the problem arose
- list of all instruments in the configuration and the connections to those instruments
- list of other electrical connections in the room

Start TRILUTION LC

To start the software and then display the **TRILUTION LC Log In** window, do either of the following:

- Select the **Start** button and then select **Gilson Applications> TRILUTION LC**.
- On the Desktop, double-click the **TRILUTION LC** icon ()

Log In

In the **TRILUTION LC Log In** window:

1. In the **Username** field, type your user name.
2. In the **Password** field, type your password.

> **NOTE** Passwords have a 20-character limit.

3. Select **Log In** to display the menu.

Help

An on-line help system is included with the software for displaying context-sensitive help or for choosing help topics from a **Contents** listing.

Access on-line help in the following ways:

- Click the **Start** button and then select **All Programs > Gilson Applications > TRILUTION LC x.x > TRILUTION LC Help**.
- Move the mouse cursor over a button in the software. A tooltip appears with text that describes what the button does.
- Select Help to display help for the dialog or task property page.
- Select ? to display help about the window.
- Select ? to display "How To" help topics (accessible from the menus).
- Select **Show** in an open help topic to display the **Contents** tab.

Liquid Chromatography Menu

Use the options in this menu to create, organize, and run applications.

The **Liquid Chromatography** menu options are:

- Project Library on page 18
- Method on page 19
- Task on page 19
- Utilities on page 19
- Reports on page 22
- About on page 22

Select the home icon in the lower right corner of any builder to bring forward the screen for accessing this menu

Project Library

Click to open the **Project Library**.

The **Project Library** is used for managing and organizing projects. Methods can be opened, applications can be run, and results can be viewed from the **Project Library**.

For more information about the **Project Library**, refer to Project Library on page 28.

Method

Select to open the **Method Builder** for specifying or editing method conditions and report options.

A method includes a configuration, a bed layout, a sequence of tasks to execute, and an analysis for indicating how collected data are analyzed and reported with regards to peaks detected in samples.

For more information about the **Method Builder**, refer to Method Builder on page 40.

Task

Click to open the **Task Builder** for creating or modifying custom tasks.

Tasks are used to perform specific actions at run time, such as moving a liquid handler or controlling a pump, and are created using a combination of commands and operators. Tasks and operators provide the basic building blocks for creating methods.

For more information, refer to Task Builder on page 684.

Utilities

Select to access the **Utilities** menu with options for setting units, creating custom bed layout elements, purging or recovering deleted items, registering TRILUTION LC, setting notifications, and enabling ERM.

The **Utilities** menu options are:

- Unit Settings
- Purge and Recover
- Bed Layout and Utilities
- Registration
- ERM
- Notification

UNIT SETTINGS

Select to access the **Unit Settings** dialog.

Members of the default **Admin** group can use **Unit Settings** to set the units of measurement for the commands and tasks and elsewhere in the software. Only users assigned to the **Admin** group have unit setting capabilities. Unit types are listed in the following table:

UNIT TYPE	UNITS OF MEASUREMENT
XYZ Movement	mm, cm
Data Level	Not used
Ion Mass	m/z
Atomic Mass	amu
Amperage	nA
Speed of Movement	cm/sec, mm/hr, mm/min, mm/sec
Volume	mL, nL, µL

UNIT SETTINGS CONTINUED ON PAGE 20

UNIT TYPE	UNITS OF MEASUREMENT
Flow Rate	mL/hr, mL/min, mL/sec, µL/min, µL/sec
Time	hrs/min/sec
Pressure	psi, MPa, Bar
Temperature	C, F, K
Wavelength	nm
Mass	mg, µg

PURGE AND RECOVER

Select to open the **Purge and Recover** utility.

Use the **Purge and Recover** utility window to permanently delete files from the database and/or restore deleted files back to their respective palettes.

It has the following buttons in the action bar:

- **Purge**: Permanently deletes the files from the database. Purged files cannot be recovered.
- **Recover**: Provides the ability to restore files back to their respective palettes. Files deleted from the database cannot be recovered.

BED LAYOUT AND UTILITIES

Select to open the **Bed Layout and Utilities** window for creating custom templates and racks.

For more information, refer to Bed Layout and Utilities on page 691.

REGISTRATION

Select to open the **Registration** utility for generating registration information. Send this information to Gilson, Inc. to request a license for TRILUTION LC.

To register:

1. Complete all fields.
2. E-mail or fax the registration information to Gilson, Inc.
3. Overwrite the temporary license found in the software's CORE folder with the license file (called LSERVRC) received from Gilson, Inc.

ERM

Click to access the ERM menu with options for using ERM features and viewing audit trails.

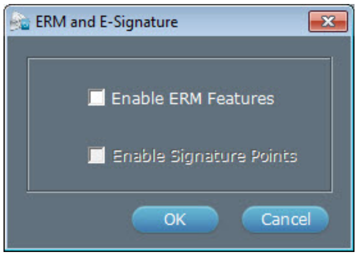
The implementation of an electronic record management system can be complex. TRILUTION LC can assist chromatographers in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management (ERM). The ERM features allow electronic records security and tracking (audit trails), electronic signatures, and method versioning of records, as well as permitting customized user access levels within the software.

This menu, accessible only to members of the default **Admin** group, provides options for electronic record management.

For more information, refer to Electronic Record Management (ERM) Features on page 710.

ERM Features

This menu is accessed from the ERM menu by a member of the default **Admin** group. ERM is enabled from this menu by selecting the **Enable ERM Features** check box. The software defaults with this box cleared (ERM features disabled).



TRILUTION LC provides for the option to enable signature points each time a component is saved. Enable this option by first selecting to **Enable ERM Features** and then select the **Enable Signature Points** check box. Enable Signature Points defaults cleared (no signatures required when saving).

Audit Trail

This menu is accessed from the ERM menu by a member of the default **Admin** group. The **Audit Trail** dialog offers three options: **Audit Trail**, **Event Log**, and **E-Signature**.

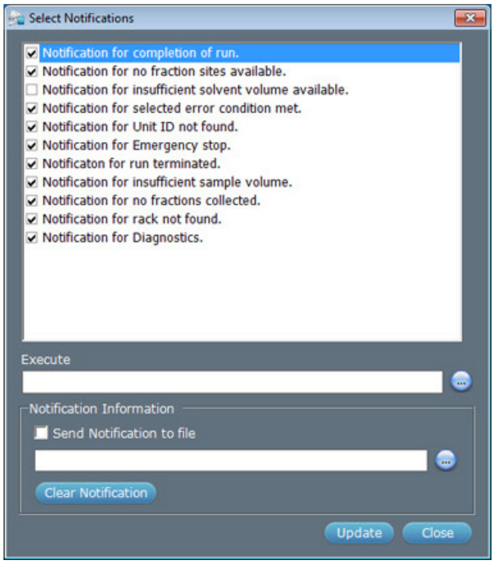
Audit Trail records the details of changes made in any of the builders prior to a save. Double-click the event in the **Audit Trail** to display the details of the changes or select **Preview** to view the information in a report format.

Event Log records the click of any action button in all builders.

E-Signature records the details (including comments entered) of each e-signature prior to a save.

NOTIFICATION

Select to open the **Select Notifications** dialog.



The **Notification** utility allows for launching a file if a specified condition occurs. Those conditions are:

- Run complete
- No fraction sites available
- Insufficient solvent volume available
- Error condition met
- Unit ID not found
- Emergency Stop activated
- Run terminated
- Insufficient sample volume available
- No fractions collected
- Rack not found
- Diagnostics

Execute

The format required to launch the file is the complete path, a hyphen, and then any arguments.

Notification Information

Optionally, send the notification message to a text file.

On the **Browse for Folder** window, select a folder and then select **OK**. On completion of the run, the notifications are saved in the specified folder with an .LCNT extension.

Clear Notification
Select to delete the notification message text files from the specified path folder.

Reports

Click to open the **Reports** window for generating the following report types: Task Report on page 223, Run Report on page 227, Project Report on page 226, Method Report on page 224, Sample Tracking Report on page 228, Analysis Report on page 229, Summary Report on page 229 (Unknown or Standard), and Calibration Report on page 230.

For more information about reports, refer to Reports on page 222.

About

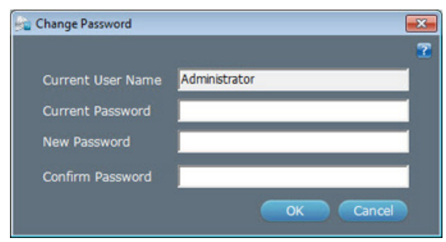
Click to open the **About** screen, which displays the license information and provides access to the **System Info**.

Administrative Tools Menu

The **Administrative Tools** menu options are:

- **Change Password**: Change passwords; refer to Change Password on page 22.
- **Users and Groups**: Create or modify Users and Groups; refer to Users and Groups on page 22.
- **Settings**: Change log on and/or log off settings; refer to Settings on page 26.
- **Maintenance Alarms**: Set reminders for maintaining the system; refer to Maintenance Alarms on page 25.

Change Password



A member of the default **Admin** group provides the user name and the default password. Optionally, log on to the software and change your password from the Administrative Tools Menu.

1. On the main menu, select **Administrative Tools**.
2. On the **Administrative Tools** menu, select Change Password to display the **Change Password** dialog.
3. On the **Change Password** dialog:
    a. In the **Current User Name** field, verify your user name.
    b. In the **Current Password** field, type your old password.
    c. In the **New Password** field, type a new password. The password is case-sensitive and has a 20-character limit.
    d. In the **Confirm Password** field, type the new password again.
    e. Select **OK**. The password is changed.

Users and Groups

A **User** is an end user of the product. Every **User** is assigned to a **Group** based on their roles. A **Group** includes **Users** with common rights.

The **Users and Groups** menu allows for creating, modifying, deleting, and viewing Users and Groups.

By default, two groups are created during the software installation: **Admin** and **Analyst**. **"Administrator"** is the default user in the **Admin** group. The **Admin** group is assigned all the rights. **"Analyst"** is the default user in the **Analyst** group. The **Analyst** group can view, create, and modify in the software.

To open **Users and Groups**:

1. On the main menu, select **Administrative Tools**.
2. On the **Administrative Tools** menu, select **Users and Groups** to display the **Users and Groups** window.

The **Users and Groups** window has two frames:

- The left frame has two tabs:
    - **Users**: Create and modify **Users**.
    - **Groups**: Create and modify **Groups**.
- The right frame displays the information based on the tab selected:
    - When the **Users** tab is selected, the **Group Name** and the **Group Description** appear.
    - When the **Groups** tab is selected, the **User Name** and the **User Description** appear.

NOTE Only members of the Admin group can create, modify, or delete Users and Groups.

Groups

A group consists of users with common roles. Each role has assigned permissions.

The **Groups** tab lists all the available groups. Create, modify, or delete groups. After selecting a group from the **Groups** tab, the users belonging to that group appear in the right frame.

For information about creating users, refer to Users on page 24.

How to Create a Group

1. On the **Users and Groups** window, select the **Groups** tab. The name of the default groups **'Admin'** and **'Analyst'** appear in the left frame.
2. Select **Create** to create a new group. The **Create Group** window appears.
3. In the **Create Group** window:
    a. In the **Group Name** field, type a new group name.
    b. In the **Description** field (optional), type a brief group description.
    c. In the **Permissions** frame, select the permissions for the various areas in the software.
    d. Click **OK**.

The new group is created and is listed on the **Groups** tab.

Modify a Group

1. On the **Users and Groups** window, select a group from the **Groups** tab. The users belonging to that group appear in the right frame and the **Modify** button is enabled.
2. Click **Modify** to display the **Modify Group** window.
3. In the **Modify Group** window, make the required changes and then select **OK**.

Delete a Group

1. In the **Groups** tab, select a group and then select **Delete**. A delete confirmation dialog box appears.
2. Click **Yes**. The selected group is deleted.

NOTE	The Admin group cannot be modified or deleted.

How to View the Group Permissions

The **Users and Groups** tabs both provide the ability to view group permissions.

View Group Permissions Using the Users tab

1. On the **Users and Groups** window, select a user from the **Users** tab. The assigned group names and descriptions for the user appear in the right frame.
2. Click **Modify**. The **Modify User** window appears.
3. Select one or more groups and then select **View Permissions**.
   - When multiple groups are selected, a combination of all group permissions is displayed.
   - When one group is selected, permissions for that specific group are displayed.
4. On the **View Group Access Permissions** window, view the following:
   a. In the **Group Name** field, the group name.
   b. In the **Group Description** field (optional), a brief description of the group.
   c. In the **Permissions** table, the permissions assigned to the group for the various areas of the software.
   d. Select **OK**.

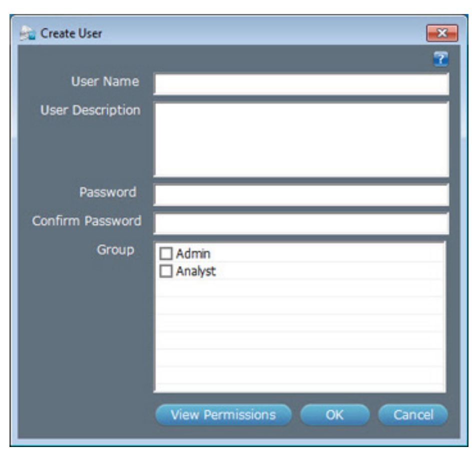
Users

Users are assigned to groups based on their defined roles (i.e., Operator, Administrator, or Scientist).

The **Users** tab lists all the available users. Create, modify, or delete users.

Users can be assigned to one or more available groups. For information about creating groups, refer to Groups on page 23.

How to Create a User



1. On the **Users and Groups** window, select the **Users** tab. The default users **'Administrator'** and **'Analyst'** are displayed in the **Users** tab with the group name in the right frame.
2. Click **Create**. The **Create User** window appears:
3. On the **Create User** window:
   a. In the **User Name** field, type a unique user name.
   b. In the **User Description** field (optional), type a brief description of the user.

c. In the **Password** field, type the password.
d. In the **Confirm Password** field, type the password for confirmation.
e. In the **Group** field, select the group(s) the user is assigned to.

4. Click **OK**.

Modify a User Properties

1. In the **Users** tab, select a user. The group name to which the user belongs, and the group description are displayed in the right frame.
2. Select **Modify** to display the **Modify User** window.
3. In the **Modify User** window:
   a. In the **User Description** field (optional), change the description.
   b. In the **Password** field, type a new password.

   NOTE The password for the default user, Analyst, is Analyst.

   c. In the **Confirm Password** field, type the new password for confirmation.
   d. In the **Group** field, select the check box to add the user to a group or clear the check box to remove the user from a group.
   e. Click **OK**.

   NOTE A User name cannot be modified.

Delete a User

1. In the **Users** tab, select a user and then select **Delete** to display a delete confirmation dialog box.
2. Select **Yes**. The selected user is deleted.

Maintenance Alarms

A feature of the software is the ability to set one or more maintenance alarms.

CREATE AN ALARM

To create a custom alarm:

1. Select **Add**.
2. When the **Alarm Name** dialog appears, type a name, and then select **OK**.
3. Select a Start day and time, the recurrence (Period), and optionally, type a message.
4. By default, any new alarms are turned On. Optionally, select Off to turn off an alarm temporarily or permanently.
5. Click **Save**.

MODIFY AN ALARM

To modify an existing alarm:

1. Make desired changes to the alarm settings.
2. Click **Save**.

RENAME AN ALARM

To rename an alarm:

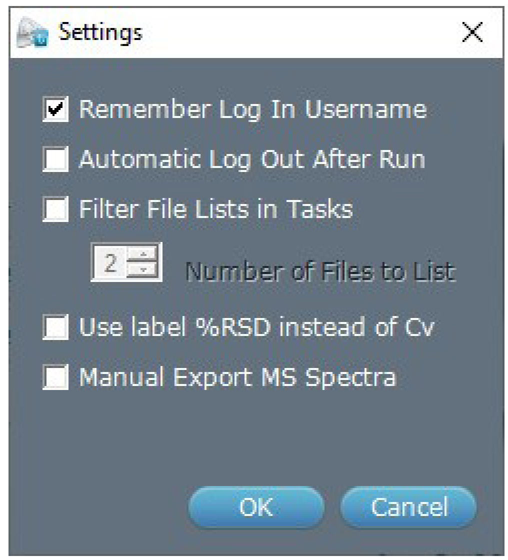
1. Click **Rename**.
2. Type the new name for the alarm.
3. Click **OK**.
4. Click **Save**.

ALARM REMINDER

Alarm reminders appear in the **Application Run** window. For more information, refer to Maintenance Alarm Reminder on page 144.

Settings

The **Settings** option in the Administrative Tools Menu, accessible only to members of the default **Admin** group, enables setting global options:



Optionally, set TRILUTION LC to remember the name of the last logged in user at each new log in and/or set TRILUTION LC to automatically log a user out after a successfully completed run. Locking the system voids the **Automatic Log Out After Run** selection. The default is to remember the user name, but to keep the user logged in after a run.

Optionally, set the number of files to list in tasks that include a file listing (**VERITY 1900 Auto Tune**, for example). Select the check box and then scroll the wheel to the desired number of files.

Optionally, select **Use label %RSD instead of Cv** to display %RSD instead of Cv in a standard or unknown summary report or calibration report.

Optionally, select **Manual Export MS Spectra** to enable export of MS spectral data from the **Results** tab.

Log Out

Click to end the current user's session and allow a different user to log in to the software.

Lock

The **Lock** option is for securing the software in its current state. All open, unsaved tasks or methods will remain open. Only the user who locked the system, or a member of the default **Admin** group, can log in when the software is locked. Lock voids an **Automatic Log Off After Run** setting.

Lock TRILUTION LC

1. On a menu, select the Lock button to display the **Confirm Lock** window.
2. On the **Confirm Lock** window, select **Lock** to display the **Unlock TRILUTION LC** window.

Unlock TRILUTION LC

1. On the **Unlock TRILUTION LC** window, in the **Password** field, type the password.
2. Select **Unlock**.

Back

Click to return to the main menu.

GEARS

The Gilson Ethernet Asynchronous Remoting System (GEARS) is a mechanism for integrating third-party devices (RS-232) with any application that includes the proper implementation of Gilson's Ethernet communication protocol. In short, a GEARS device appears as if it were a Gilson Ethernet device. GEARS devices may be created using the GEARS Configuration Utility, which is used to define device instruction sets and add the device to the TRILUTION database (adds device specific commands for use within the **Task Builder**, and provides a device which may be inserted into method configurations).

TRILUTION LC Backup Utility

The **TRILUTION LC Backup Utility**, installed with TRILUTION LC, is used to create backup copies of the database, which can be restored, if desired.

Close TRILUTION LC

Select on the main menu.

PROJECT LIBRARY

PROJECT LIBRARY

The **Project Library** is used for managing and organizing projects.

A project is a folder that contains:

- applications
- methods
- results

Key concepts to understand about the **Project Library** are:

- How to Delete a Project on page 34
- How to Share a Project on page 35
- How to Export Projects on page 35
- How to Import Projects on page 36
- How to Create an Application on page 37
- How to Export Applications on page 38
- How to Import Applications on page 39

Project Library Window

The **Project Library** serves as an organized, structured way to save and group applications and methods.

The **Project Library** window includes:

- Applications Palette
- Methods Palette
- Action Buttons
- Filter
- Workspace
- Info Window

Applications Palette

The **Applications** palette lists the available applications.

For information on how to run an application, refer to How to Start a Run on page 153.

Methods Palette

The **Methods** palette lists the available methods.

For information on how to create a method, refer to How to Create a Method on page 43.

Filter

CRITERIA

Lists the projects based on the filter selected.

FILTER	DESCRIPTION
Project Created by User	Displays only the projects that the Current User has created.
All Projects for which the User has access	Displays only the projects that have been created by or shared with the Current User. The exception is when the Current User is a member of the default Admin group. Those users see all projects created by all users. For more information about sharing, refer to **How to Share a Project on page 35**.

BUTTONS

Use the following buttons to change the view or filter components in the **Project Library**:

ACTION BUTTON	DESCRIPTION
	Expands the view to display all projects, applications, and methods.
	Collapses the view to show only the Projects branch.
	Displays the **Advanced Filter** dialog in which projects can be filtered by created date, modified date, or run date within a specified date range.

WORKSPACE

Forms the area to manage and organize projects.

RIGHT-CLICK MENU

The software employs the use of right-click options in the **Project Library**.

Project

Right-click on a **Project** icon () in the **Project Library** to display the following menu options:

MENU	DESCRIPTION
Change Description	Modifies the short and/or long description for the project.
Paste	Adds the application from the clipboard to the project. When an application is pasted, a dialog appears with options to link the application to other applications with the same name (Paste Same Copy) or rename the application. When Paste Same Copy is selected, any changes to the application or its results are updated in all copies of that application. For example, if a method is removed from the original application, it will also be removed from the pasted application.

CONTINUED ON PAGE 30

MENU	DESCRIPTION
Save As	Saves an existing project to a new name. Optionally, type a short and/or long description for the project.
Delete	Deletes the project if it does not have dependent applications. For more information, refer to **Delete a Project on page 34**.
Create Application	Creates an application within the project. Optionally, type a short and/or long description for the application. For more information, refer to **How to Create an Application on page 37**.
Share Project	Grants permission to a user and/or group to access or import the project. For more information, refer to **How to Share a Project on page 35**.

Application

Right-click on an **Application** icon ( ) in the **Project Library** to display the following menu options:

MENU	DESCRIPTION
Change Description	Modifies the short and/or long description for the application.
Copy	Copies the application to the clipboard.
Paste	Adds the method from the clipboard to the application.
Save As	Save an existing application to a new name. Optionally, type a short and/or long description for the application.
Run	Opens the **Application Run Window on page 137**.
Results	Opens the Results window. For more information about results, refer to **Results on page 173**.
Remove from Project	Removes the application from the project and places it in the Applications palette.
Delete	Deletes the application if it does not have dependent methods or results. For more information, refer to **Delete an Application on page 38**.
Create Method	Opens the **Method Builder** to create a method within the application.
Enable Open Access	Allows the application to be accessible in TRILUTION LC Open Access. Applications enabled for Open Access use the following icon: . For more information about Open Access, refer to **Open Access on page 704**.
Disable Open Access	Marks an Open Access Application inaccessible in TRILUTION LC Open Access. For more information about Open Access, refer to **Open Access on page 704**.
Minimum Fraction Sites	Sets the minimum number of fraction sites required for each injection when the application is enabled for Open Access. For more information about Open Access, refer to **Open Access on page 704**.
Disable Placement Safety	Placement Safety defaults enabled. When placement safety is disabled, Open Access users will be prompted to place samples even if the instrument is running. For more information about Open Access, refer to **Open Access on page 704**.

Method

Right-click on a **Method** icon (M) in the **Project Library** to display the following menu options:

MENU	DESCRIPTION
Copy	Copies the method to the clipboard.
Open	Opens the method in the **Method Builder**.
Remove from Application	Removes the method from the application and places it in the **Methods** palette.
Delete	Deletes the method or all versions of the method. For more information, refer to **Delete Methods on page 49**.
Default Method	Sets the selected method's configuration, bed layouts, control error handling (but NOT the control), analyses, and analysis error handling as default for all new methods created. Method name will then appear in bold.
Application Default	Sets the selected method's configuration as the default Method Configuration in the Application Run window.

Spectral Library

Right-click on a **Spectral Library** icon in the **Project Library** to display the following menu options:

MENU	DESCRIPTION
Open	Opens the spectral library.
Delete	Deletes the spectral library.

Action Buttons

The following action buttons are in the lower left corner of the **Project Library**.

ACTION BUTTON	DESCRIPTION
Create Project	Creates a new project. For more information, refer to **How to Delete a Project on page 34.**
Run	Runs the selected application. For more information, refer to **Application Run on page 137**.
Refresh	Reloads the palettes with any new applications or methods created or imported.
Export	Copies a project to a specified location as a .LCPE file or copies an application to a specified location as a .LCAE file. For more information, refer to **How to Export Projects on page 35** or **How to Export Applications on page 38**.
Import	Imports a .LCAE file and lists the application in the Applications palette in the Project Library or imports a .LCPE file and displays the project in the Project Library workspace. Imported components will not appear until the window is refreshed. For more information, refer to **How to Import Projects on page 36** or **How to Import Applications on page 39**.

Info Window

The **Info Window** displays the **Current User**, **Name**, **Created Date**, **Created By**, **Last Modified Date**, **Last Modified By**, **Short Description**, and **Long Description**.

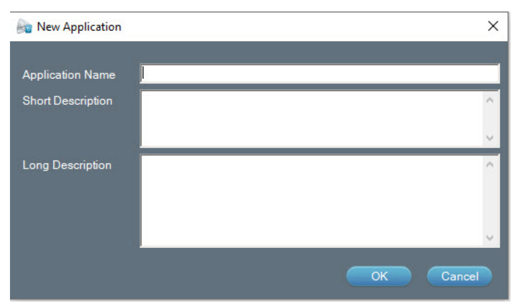
Project

Important concepts to understand about projects are:

- How to Delete a Project on page 34
- How to Share a Project on page 35
- How to Modify a Project on page 34
- How to Export Projects on page 35
- How to Import Projects on page 36
- How to Delete a Project on page 34

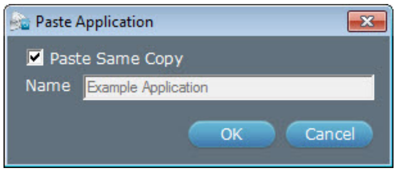
How to Create a Project

1. On the **Liquid Chromatography** menu, select **Project Library**.
2. In the **Project Library**, do either of the following:
   a. Select **Create Project** to display the **New Project** dialog.
   b. Right-click on the workspace and then select **Create Project**.
3. In the **New Project** dialog:
   a. In the **Project Name** field, type a name.
   b. In the **Short Description** field (optional), type a brief description of the project.
   c. In the **Long Description** field (optional), type a detailed description of the project.
   d. Select **OK**. The **Project Library** is refreshed with the new project listed in the workspace.
4. To add an application to the project, do either of the following:
   - Right-click on the project and then select **Create Application** to display the **New Application** dialog.
     1. In the **Application Name** field, type a name.
     2. In the **Short Description** field (optional), type a brief description of the application.



3. In the **Long Description** field (optional), type a detailed description of the application.
4. Click **OK**. The **Project Library** is refreshed with the new application listed in the **Applications** palette and in the project.

- From the **Applications** palette, drag an application into the workspace and then drop it in the project to be given the option to link the application to other applications with the same name (Paste Same Copy) or rename the application.

  When **Paste Same Copy** is selected, any changes to the application or its results are updated in all copies of that application. For example, if a method is removed from the original application, it will also be removed from the pasted application.

5. To add a method to the application, do one of the following:
   - Right-click on the application and then select **Create Method**. The Method Builder opens.
   - From the **Methods** palette, drag a method into the workspace and then drop it in the application.
   - Drag a method from an existing application and then drop it in the application.

PROJECT LIBRARY

Modify a Project

To modify a project, do any of the following:

- Change a Description
- Add Applications
- Remove Applications
- Change the Share settings. (How to Share a Project)

CHANGE A DESCRIPTION

To change the description after the project has been created:

1. Right-click on the project and then select **Change Description**.
2. In the **Short Description** field (optional), type a brief description of the project.
3. In the **Long Description** field (optional), type a detailed description of the project.

ADD APPLICATIONS

From the **Applications** palette, drag an application into the workspace and then drop it in the project to be given the option to link the application to other applications with the same name (**Paste Same Copy**) or rename the application.

When **Paste Same Copy** is selected, any changes to the application or its results are updated in all copies of that application. For example, if a method is removed from the original application, it will also be removed from the pasted application.

REMOVE APPLICATIONS

An application can be removed from a project without deleting the application. To remove an application, right-click on the application and then select **Remove from Project**. The application is removed from the project, but remains in the **Applications** palette.

Delete a Project

To delete a project:

1. Select a project and then right-click to view the submenu. On the submenu, select **Delete**.
2. On the **Delete confirmation** dialog box, click **Yes**. The project is deleted. Use the Purge and Recover utility to permanently delete the project.

NOTE	**A project cannot be deleted if it contains applications. Remove or delete associated applications before attempting to delete the project.**

How to Share a Project

To enable other users to view or modify a project, it must be shared. Once shared, the logged in user can act on the project per the permissions assigned to that user's group. For example, a user with the **Modify Project Library** permission can make changes to a project that has been shared with him.

Projects are automatically shared with all members of the default **Admin** group and can be accessed by those members by selecting **"All projects for which user has access"** filter criteria. Only members of the default **Admin** group can unshare a project with other members of the default Admin group.

To share a project:

1. In the **Project Library**, right-click the project to be shared and then select **Share Project**.
2. From the drop-down list of **Groups**, select the group with which the project should be shared.
3. After the group is selected, the list of users in that group appears. Select the check box next to each user with whom the project should be shared.
4. Select **Update**.
5. Repeat for each additional group.

How to Export Projects

1. In the **Project Library**, select **Export** to display the **Export** window.
2. In the **Export** window:
   a. Select [P] to display projects.
   b. In the **Select the items to be exported** field, select the projects.
   c. In the **Select a path** field, do either of the following:
      - Accept the default path of **C:\Documents and Settings\OS User Name\My Documents\TRILUTION LC x.x\Export**.
      - Click [...] to display the **Browse For folder** window. On the **Browse For folder** window, select a folder and then select **OK**.

   NOTE You must have permission to write to the folder.

3. Click **OK**. On completion of the export operation, the project (including the applications and methods, but not results) is saved in the specified folder with a .LCPE extension.

   NOTE If a project with the same name is found in the export path, an option is provided to rename or overwrite the project or to skip the export operation for that project.

4. When the export success/fail dialog appears:
   - Click **Details** to view the log information of the export operation.
   - Click **OK**.

How to Import Projects

1. In the **Project Library**, select **Import** to display the **Import** window.
2. From the **Import** window:
   a. Browse for and select one or more **Project Export Files** (.LCPE).
   b. Select **Open**.
3. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

System Conflicts

If components within the project being imported already exist with the same name on the system, a dialog appears listing those components.

By default, all components are set to be renamed from **Name** to **New Name** on click of **Import**.

1. Optionally, modify the **New Name**:
   a. Click to highlight in the cell in the **New Name** column for the component name to be changed.
   b. Click in the cell again to activate the editing function.
   c. Type the new name.
   d. Press **Enter** or click off the cell to accept.
   e. Click **Import**.

   Or, change the status to **Overwrite** by doing either of the following:
   - Click **Overwrite All** and then click **Import** to overwrite all listed components.
   - Right-click the component name, select **Overwrite**, and then click **Import** to overwrite only the component selected.

NOTE	Before overwriting a component, it is good practice to review where that component is used. Right-click the component name and then select Where Used to display this information.

   To change the status of all components back to **Rename**, click **Rename All**.
2. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Application

Important concepts to learn about applications are:

- How to Create an Application on page 37
- How to Export Applications on page 38
- How to Import Applications on page 39

How to Create an Application

An application contains methods and results. Run applications to obtain results.

1. Right-click on the project and then select **Create Application** to display the **New Application** dialog.
   a. In the **Application Name** field, type a name.
   b. In the **Short Description** field (optional), type a brief description of the application.
   c. In the **Long Description** field (optional), type a detailed description of the application.
   d. Select **OK**. The **Project Library** is refreshed with the new application listed in the **Applications** palette and in the project.

Modify an Application

To modify an application, do any of the following:

- Change a Description
- Add Methods
- Remove Methods

CHANGE A DESCRIPTION

To change the description after the application has been created:

1. Right-click on the application and then select **Change Description**.
2. In the **Short Description** field (optional), type a brief description of the application.
3. In the **Long Description** field (optional), type a detailed description of the application.

ADD METHODS

To add a method to an application, do any of the following:

- From the **Methods** palette, drag a method into the workspace and then drop it in the application.
- Drag a method from one application and then drop it in another.
- Right-click on a method and then select **Copy** and then right-click on the application and then select **Paste**.

Any changes to the method are updated in all copies of that method. For example, if the fraction collection settings are modified in the original method, they will also be modified in the pasted method.

REMOVE METHODS

A method can be removed from an application without deleting the method. To remove a method, right-click on the method and then select **Remove from Application**. The method is removed from the application, but remains in the **Methods** palette.

Delete an Application

To delete an application:

1. Select an application and then right-click to view the submenu. On the submenu, select **Delete**.
2. On the **Delete confirmation** dialog box, click **Yes**. The application, and any associated sample lists, are deleted.
3. Optionally, delete the application permanently using the Purge and Recover utility.

NOTE	An application cannot be deleted if it contains methods or results. Remove or delete associated methods and archive results before attempting to delete the application.

View Results

To view results, do either of the following:

- Right-click on an application and then select **Results**.
- Double-click the **Results** icon ( ).

For more information about results, refer to Results on page 173.

How to Export Applications

1. In the **Project Library**, select **Export** to display the **Export** window.
2. In the **Export** window:
    a. Select to display applications.
    b. In the **Select the items to be exported** field, select the applications.
    c. In the **Select a path** field, do either of the following:
    - Accept the default path of **C:\Documents and Settings\OS User Name\My Documents\TRILUTION LC x.x\Export**.
    - Select to display the **Browse For folder** window. On the **Browse For folder** window, select a folder and then click **OK**.

NOTE	You must have permission to write to the folder.

3. Select **OK**. On completion of the export operation, the application and methods, but not results are saved in the specified folder with a .LCAE extension.

NOTE	If an application with the same name is found in the export path, an option is provided to rename or overwrite the application or to skip the export operation for that application.

4. When the export success/fail dialog appears:
    - Click **Details** to view the log information of the export operation.
    - Click **OK**.

How to Import Applications

1. In the **Project Library**, select **Import** to display the **Import** window.
2. From the **Import** window:
   a. Browse for and select one or more **Application Export Files** (.LCAE).
   b. Click **Open**.
3. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

System Conflicts

If components within the application being imported already exist with the same name on the system, a dialog appears listing those components:

By default, all components are set to be renamed from **Name** to **New Name** on click of **Import**.

1. Optionally, modify the **New Name**:
   a. Click to highlight in the cell in the **New Name** column for the component name to be changed.
   b. Click in the cell again to activate the editing function.
   c. Type the new name.
   d. Press **Enter** or click off the cell to accept.
   e. Click **Import**.

   Or, change the status to **Overwrite** by doing either of the following:
   - Click **Overwrite All** and then click **Import** to overwrite all listed components.
   - Right-click the component name, select **Overwrite**, and then click **Import** to overwrite only the component selected.

   NOTE Before overwriting a component, it is good practice to review where that component is used. Right-click the component name and then select Where Used to display this information.

   To change the status of all components back to **Rename**, click **Rename All**.
2. When the import success/fail dialog appears:

- Click **Details** to view the log information of the import operation.
- Click **OK**.

METHOD BUILDER

To begin creating a method, select **Method** from the **Liquid Chromatography** menu.

Key concepts to understand about the Method Builder are:

- How to Create a Method on page 43
- How to Save a Method on page 45
- How to Export Methods on page 47
- How to Import Methods on page 48

Method Builder Window

Using the options in the Method Builder, specify the configuration, a bed layout, method conditions for controlling instruments (Control), and analysis parameters (Analysis).

The Method Builder window includes:

- Action Buttons
- Configuration Tab
- Bed Layout Tab
- Control Tab
- Analysis Tab
- Configured Instruments Panel
- Info Window

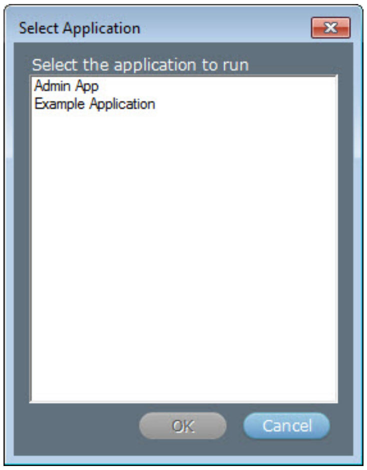
Action Buttons

The following action buttons are in the lower left corner of the Method Builder.

ACTION BUTTON	DESCRIPTION
New	Creates a new method. For more information, refer to **How to Create a Method on page 43**.
Open	Opens an existing method. The Default Method (if applicable) appears bold. For more information, refer to **View a Method on page 47**.
Save	Saves an existing method to the same name. For more information, refer to How to Save a Method.
Save As	Saves a new method or save an existing method to a new name. Optionally, type a short and/or long description for the method.
Delete	Opens the Delete Method dialog for selecting and deleting one or all version of a method or methods. For more information, refer to Delete Methods.

ACTION BUTTONS CONTINUED ON PAGE 41

ACTION BUTTON	DESCRIPTION
Export	Exports the method to a specified location as a .LCME file. For more information, refer to **How to Export Methods on page 47**.
Import	Imports a .LCME file and lists the method in the Methods palette in the Project Library or replaces it in the application. For more information, refer to **How to Import Methods on page 48**.
Refresh	Reloads the Tasks palette with the latest tasks, including any new tasks created, and applies any changes to the unit settings.
Run	Opens the Application Run window. If the method is in multiple applications, the software first prompts you to select which application you want to run and then opens the Application Run window. For more information, refer to **Application Run on page 137**.



Configured Instruments Panel

This panel is used to provide information and for navigation. Information provided is dependent on the instrument type and right-click options are available for each item (refer to **Right-click menu**, below). Select any instrument name to display the configuration property page for that instrument. Select any bed layout name to navigate to the **Bed Layout** tab and display that bed layout. Select any analysis name to navigate to the **Analysis** tab and display that analysis.

RIGHT-CLICK MENU

Configuration or Bed Layout

Right-click on a configuration name or bed layout name to display the following menu options:

MENU	DESCRIPTION
New	For a configuration, navigates to the Configuration tab, clears the workspace, and displays a unique name for the new configuration. For a bed layout, displays the Select Template dialog, which provides a filtered list of templates for the selected instrument. After selecting a template and then clicking OK, navigates to the Bed Layout tab and displays a unique name for the new bed layout.

CONTINUED ON PAGE 42

MENU	DESCRIPTION
Browse	For a configuration, displays the **Browse Configuration** dialog listing all configurations. After selecting a configuration and then clicking **OK**, navigates to the **Configuration** tab and displays the browsed configuration. For a bed layout, displays the **Select Bed Layout** dialog listing all bed layouts. After selecting a bed layout, optionally click **Where Used** and then select the bed layout again on the **Where Used** dialog to see which methods use the selected bed layout. Click **OK** to exit the **Where Used** dialog and then click **OK** to accept the bed layout selection, navigate to the **Bed Layout** tab, and display the browsed bed layout.
Rename	Activates inline editing to change the name of the component and thereby break the shared component link, if applicable.

Analysis

Right-click on an analysis name to display the following menu options:

MENU	DESCRIPTION
Default Analysis	Default Analysis is a toggle option. When toggled on, the selected analysis will be used to analyze the data from the selected data channel during the run.
Rename Analysis	Activates inline editing to change the name of the analysis.
Remove Analysis	Disassociates the selected analysis from the selected data channel.

Instrument

Right-click on an instrument name to display the following menu options:

MENU	DESCRIPTION
Rename Instrument	Activates inline editing to change the name of the instrument.
Remove Instrument	Deletes the selected instrument from the configuration and thereby causes a conflict in a shared configuration when attempting to save the method, if applicable.

Data Channel

Right-click on data channel name to display the following menu options:

MENU	DESCRIPTION
New Analysis	Navigates to the Analysis tab and displays a unique name for the new analysis.
Browse Analysis	Select **Saved Analysis** to display the Browse Analysis dialog listing all analyses. After selecting an analysis and then clicking **OK**, adds the selected analysis to the selected data channel. Or select an analysis from the menu listing of all analyses used in the open method. The analysis is added to the selected data channel.
Use Channel	Use Channel is a toggle option. When toggled on, the selected data channel's signal will be displayed on the chromatogram and also in the status box during data collection in an application run.
Primary Channel	Primary Channel is a toggle option. When toggled on, the selected data channel is specified as the primary channel. One channel per configuration must be specified as the primary channel. Fraction collection and sample re-injection are based on the primary channel.
Rename Channel	Activates inline editing to change the name of the data channel.

Configuration Tab

For details about this tab and how to create a configuration, refer to Method Builder - Configuration on page 50.

METHOD BUILDER

METHOD BUILDER

Bed Layout Tab

For details about this tab and how to select racks and number tubes to create a bed layout, refer to Method Builder - Bed Layout on page 84.

Control Tab

For details about this tab and how to add tasks and a gradient to a method, refer to Method Builder - Control on page 88.

Analysis Tab

For details about this tab and how to create analyses, refer to Method Builder - Analysis on page 102.

Info Window

The info window lists information about the open method.

How to Create a Method

The following provides an overview of the steps to create a method.

NOTE	Required minimum time between tasks in a method is 0.02 min before Start Data Collection and 0.1 min after Start Data Collection. Separate tasks to the same instrument by a minimum of 0.1 min.

1. To begin creating a method, do one of the following:
   - Select **Method** from the **Liquid Chromatography** menu.
   - Open an existing method and then click New.
   - Right-click on an application in the **Project Library** and then select **Create Method**.
2. Create a configuration. For more information, refer to How to Create a Configuration on page 52.
3. Create a bed layout. For more information, refer to How to Create a Bed Layout on page 85.
4. Add a mobile phase template. For more information, refer to How to Create Gradient or Isocratic Conditions on page 98.
5. Add a fraction collection task and set the fraction collection parameters. For more information, refer to Fraction Collection Settings on page 366 or Conditional Fraction Collection on page 351.
6. Add a detector settings task. For more information, refer to 151 152 Detector Settings on page 280, 155 156 Detector Settings on page 281, 171 172 Detector Settings.
7. Add a task to autozero the detector. For more information, refer to Detector Autozero Channel or 506C Autozero Channel.
8. Add an injection task and set the injection task parameters. For more information, refer to List of Tasks.
9. Add a **synchronize** to **sync 1** in the injection task. For more information, refer to Sync.
10. Add the **Start Data Collection** task. For more information, refer to Start Data Collection.
11. Add a synchronize to the end of the injection task. For more information, refer to Sync.
12. Add the **Start Fraction Collection** task. For more information, refer to Start Fraction Collection.

13. Add the **Stop Fraction Collection** task. For more information, refer to Stop Fraction Collection.
14. Add the **Stop Data Collection** task. For more information, refer to Stop Data Collection.

How to Save a Method

To run a method, it must be saved. When finished creating the method, click **Save**.

Three scenarios are possible, and each displays different information during the save.

- If the method does not use any shared components or shared components have not been modified, refer to Basic Save on page 45 for more information.
- If the method uses shared components that have been modified, but those modifications do not cause a conflict (i.e., adding an instrument to the configuration not requiring a bed layout, modifying a bed layout while keeping all zone names, or modifying an analysis, etc.), refer to Save Method Using Shared Components <OK to Update> on page 45 for more information.
- If the method uses shared components that have been modified and those modifications cause a conflict (i.e., removing any instrument from the shared configuration, adding an instrument to the shared configuration that requires a bed layout, removing zones from a shared bed layout, or referencing an error method in the shared analysis that is used in a method selected to be used for error handling), refer to Save Method Using Shared Components <Cannot Update> on page 46 for more information.

After the method has been saved, the **Run** button is active. Select **Run** to open the **Application Run** window. If the method is in multiple applications, the software first prompts to select which application to run and then opens the **Application Run** window. For more information, refer to Application Run on page 137.

Basic Save

If the method does not use any shared components or shared components have not been modified, the **Save Method** dialog looks similar to that shown at right.

Do the following:

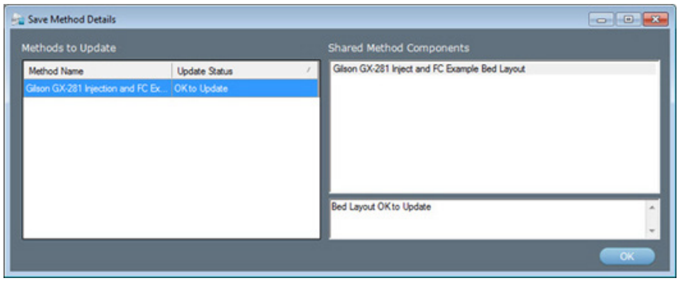
1. Type a name for the method in the **Name** field or accept the unique default name provided.
2. Optionally, type a short and/or long description.
3. Select the applications to which this method will be saved. If no applications are selected, the method will be saved and will appear in the **Methods** palette in the **Project Library**.
4. Optionally, select the **Default Method** check box to set the method's configuration, bed layouts, control error handling (but **NOT** the control tasks), analyses, and analysis error handling as default for all new methods created.
5. Optionally, select the **Use for Error Handling** check box to indicate that the method should be available for selection as an error method in an error condition. Methods used for error handling cannot reference another method in an error handling condition.

Save Method Using Shared Components <OK to Update>

If the method uses shared components that have been modified, but those modifications do not cause a conflict, the **Save Method** dialog indicates that the **Update Status** is **OK to Update** and the dialog looks similar to that shown.

Examples of modifications that would set the **Update Status** to **OK to Update** are adding an instrument not requiring a bed layout, modifying a bed layout while keeping all zone names, or modifying an analysis.

For more details about which components were modified and the methods that will be affected, select **Details**. A dialog similar to that shown appears:

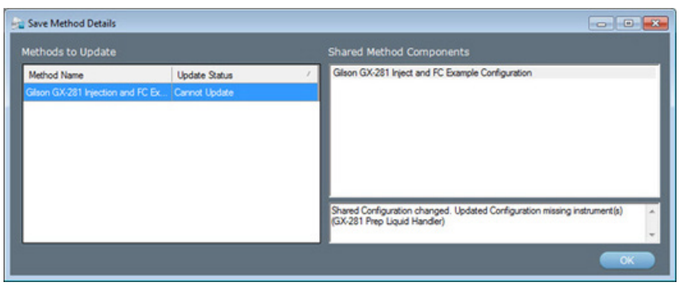


Optionally, cancel out of the save and then rename components to break the shared component link (refer to Configured Instruments Panel on page 41). Follow the steps described for the Basic Save on page 45.

Save Method Using Shared Components <Cannot Update>

If the method uses shared components that have been modified and those modifications cause a conflict, the **Save Method** dialog indicates that the **Update Status** is **Cannot Update** and the dialog is similar to that shown. Examples of modifications that would set the **Update Status** to **<Cannot Update>** are: removing any instrument from the shared configuration, adding an instrument to the shared configuration that requires a bed layout, removing zones from a shared bed layout, or referencing an error method in the shared analysis that is used in a method selected to be used for error handling.

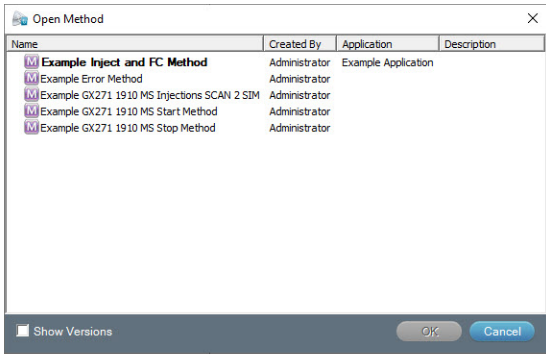
For more details about the modifications that were made and the methods that will be affected, select **Details**. A dialog similar to that shown below appears:



Cancel out of the save and then rename affected components causing a conflict to break the shared component link (refer to Configured Instruments Panel on page 41). Resolve any conflicts and then save the method.

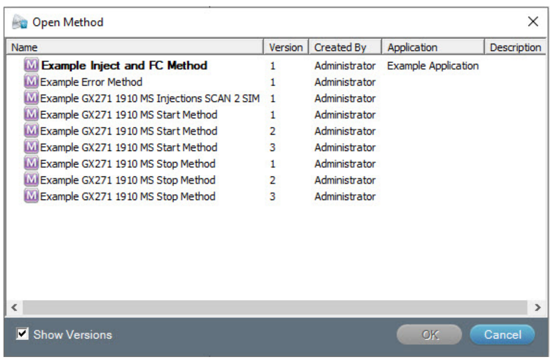
View a Method

1. In the **Method Builder**, select **Open** to display the **Open Method** window. The **Default Method** (if applicable) appears **bold**.



   Select the **Show Versions** check box to see all versions of all methods.

2. In the **Open Method** window, select a method and then click **OK**. The method appears in the workspace.



How to Export Methods

1. In the **Method Builder**, select **Export** to display the **Export** window.
2. In the **Export** window:
   a. In the **Select the items to be exported** field, select the methods.

      Select the **Show Versions** check box to see all versions of all methods.

   b. In the **Select a path** field, do either of the following:
      - Accept the default path of **C:\Documents and Settings\OS User Name\My Documents\TRILUTION LC x.x\Export**.
      - Select  to display the **Browse For folder** window. On the **Browse For folder** window, select a folder and then click **OK**.

NOTE You must have permission to write to the folder.

3. Select **OK**. On completion of the export operation, the method (with its embedded tasks and error handling methods) is saved in the specified folder with a .LCME extension.

> **NOTE** If a method with the same name is found in the export path, an option is provided to rename or overwrite the method or to skip the export operation for that method only

4. When the export success/fail dialog appears:
   - Select **Details** to view the log information of the export operation.
   - Select **OK**.

How to Import Methods

1. In the **Method Builder**, select **Import** to display the **Import** window.
2. From the **Import** window:
   a. Browse for and select the Method Export files (.LCME).
   b. Click **Open**.
3. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

System Conflicts

If components, custom tasks, or error method within the method being imported already exist with the same name on the system, a dialog appears listing those components.

By default, all components are set to be renamed from Name to New Name on click of Import.

1. Optionally, modify the **New Name**:
   a. Click to highlight in the cell in the **New Name** column for the component name to be changed.
   b. Click in the cell again to activate the editing function.
   c. Type the new name.
   d. Press Enter or click off the cell to accept.
   e. Click **Import**.

   Or, change the status to Overwrite by doing either of the following:
   - Click **Overwrite All** and then click **Import** to overwrite all listed components.
   - Right-click the component name, select **Overwrite**, and then click **Import** to overwrite only the component selected.

   > **NOTE** Before overwriting a component, it is good practice to review where that component is used. Right-click the component name and then select Where Used to display this information.

   To change the status of all components back to Rename, click **Rename All**.
2. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Delete Methods

1. In the **Method Builder**, select **Delete** to display the **Delete Method** window.
2. In the **Delete Method** window, select the methods to delete. All versions of the method will be deleted. Methods designated as error handling methods that are used in an error condition cannot be deleted.
   - Select the **Show Versions** check box to see all versions of all methods. Select which versions of the method will be deleted.
   - Optionally, view the **Where Used** information for the selected method.
3. Select **Delete**.
4. On the **delete confirmation** dialog, select **Yes** to complete the delete operation, click **No** to return to the **Delete Method** window, or click **Cancel** to return to the **Method Builder**.
5. Optionally, delete the methods permanently using the Purge and Recover utility.

Close the Method Builder

Do either of the following:

- Click in the lower right corner to return to the main menu.
- Select in the upper right corner to close the Method Builder.

METHOD BUILDER - CONFIGURATION

A configuration consists of a group of uniquely named instruments. The configuration is part of a method.

The drag-and-drop feature enables easy creation of configurations by dragging an instrument and dropping it into the workspace.

For information about how to create a configuration, refer to How to Create a Configuration on page 52.

Configuration Tab Window

The **Configuration** tab window in the **Method Builder** is a graphical interface used to create a configuration.

The Configuration tab window includes:

- Instrument Types
- Available Instruments
- Workspace
- Properties

Instrument Types

Lists the available instrument groups.

The table below lists the instrument types.

INSTRUMENT TYPE	
Detector	Mobile Phase
Fraction Collector	Switching Valve
Injector	Communication
Liquid Handler	Syringe Pump

Available Instruments

Lists the instruments of the selected instrument group or those identified during the scan.

Workspace

The **Workspace** is an area used to create or view a configuration and display the configuration name.

Properties

Area used to view and/or edit instrument properties.

Instruments are grouped by type on the Configuration tab of the Method Builder.

Each instrument has a set of properties unique to that instrument.

The set of properties for an instrument may include one or more of the following tabs:

TAB	DESCRIPTION
Setup	Provide specific information about the instrument to the software.
Units	Provide information about the scale to be used and label for user-defined data units.
Contacts	Name input and output contacts. This information will be used to identify the contact in a task.
General	Enter the instrument name and GSIOC ID or serial numbers. This information will be used to identify the instrument in a task and to the software.

For information about how to create a configuration, refer to **How to Create a Configuration on page 52**.

METHOD BUILDER - CONFIGURATION

How to Create a Configuration

1. In the **Method Builder**, select the **Configuration** tab.
2. Right-click on the configuration name in the **Configured Instruments** panel, select **New Configuration**, and then do either of the following:
   - From **Instrument Types**, select an instrument group (**Detector**, **Fraction Collector**, **Injector**, **Liquid Handler**, **Mobile Phase**, **Switching Valve**, **Communication**, or **Syringe Pump**). The instruments in that group are listed in the **Available Instruments** window.
   - Select **Scan**. The software searches for Gilson GSIOC and Ethernet instruments.
3. From the **Available Instruments** window, drag an instrument and then drop it in the workspace. Set the properties for the instruments to match your configuration.

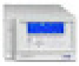
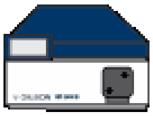
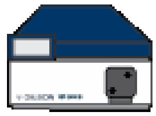
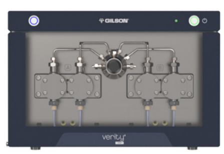
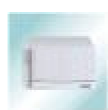
   NOTE Each instrument in a Gilson system must have a unique GSIOC ID.

4. If a data instrument (Detector or Communication) will be used:
   a. Right-click on a data channel marked for use and then select **Primary Channel**. One channel per configuration must be specified as the primary channel. Fraction collection and sample re-injection are based on the primary channel.
   b. Right-click on a data channel in the **Configured Instruments** panel and then do one of the following:
      - Select **New Analysis**. Optionally, set the peak integration, report, and error handling options for the analysis. Refer to Method Builder - Analysis for details.
      - Select **Browse Analysis** and then **Saved Analysis** to associate an existing analysis from any method to the data channel. Any changes to the analysis will be reflected in all copies of the analysis with the same name in any method.
      - Select **Browse Analysis** to associate an existing analysis from the current method to the data channel. Any changes to the analysis will be reflected in all copies of the analysis with the same name.

      Optionally, right-click on a data channel and then select **Rename Channel** to rename the data channel.

      Select the **Configuration** tab and repeat step b for any additional data channels.
   c. Right-click on an analysis and then select **Default Analysis** to specify which analysis TRILUTION LC will use during the run for the associated data channel.
   d. Optionally, right-click on an analysis and then select **Rename Analysis** to rename the analysis.
5. Optionally, right-click on the configuration name in the **Configured Instruments** panel and then select **Rename Configuration** to rename the configuration. By default, each new configuration is given a unique name.

Detector

	151 Detector		152 Detector
	155 Detector		156 Detector
	157 Detector		159 Detector
	171 DAD		172 DAD
	VERITY 1741 UV-VIS Detector		VERITY 1810 Conductivity and pH Monitor
	VERITY 1900 MS Detector		VERITY 1910 MS Detector
	VERITY 1920 MS Detector		
	Flexar SQ 300 MS Detector		Virtual Detector

DETECTOR PROPERTIES

151 Detector/152 Detector/155 Detector/156 Detector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each data channel. This description and the data channel's signal will be displayed in the status box while data is being collected during an application run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected. There are three data channels available (labeled 15X Channel 1, 15X Channel 2, 15X Channel 3, where X is 1, 2, 5, or 6 dependent on the model of the detector). The maximum number of channels per configuration that can be used is eight.	151 Channel 1 152 Channel 1 155 Channel 1 156 Channel 1	N/A
Data Rate (points/sec)	The number of data points collected per second for the channel. Optionally, set a different data rate for each channel.	20	1–80
Units	The user unit that corresponds to the mV value indicated and the label for those units. Data is scaled, plotted, and analyzed according to these units. All calculations (i.e., heights and areas) are reported according to these units. Units are shown on the graph axis (while running and in reports). Multiple graph axes are displayed if different user units are set for different data channels. A symbol is displayed on the graph axis to indicate which data channel is using that axis.	1 mV = 1 mV	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Detector	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	16	10–19

157 Detector and 159 Detector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each data channel. This description and the data channel's signal will be displayed in the status box while data is being collected during an Application Run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected. There is one data channel available for the 157 Detector (labeled 157 Channel 1) and four data channels available for the 159 Detector (labeled 159 Channel 1 through 159 Channel 4).	157 Channel 1 159 Channel 1	N/A
Data Rate (points/sec)	The number of data points collected per second for all channels. One rate is set for all channels.	20	5, 8, 10, 20, 25, 40, 50
Units	The user unit that corresponds to the AU value indicated and the label for those units. Data scaled, plotted, and analyzed according to these units. All calculations (i.e., heights and areas) are reported according to these units. Units are shown on the graph axis (while running and in reports). Multiple graph axes are displayed if different user units are set for different data channels. A symbol is displayed on the graph axis to indicate which data channel is using that axis.	1 AU = 1 AU	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Detector	N/A
Instrument Serial Number	The serial number of the detector.	N/A	N/A

171 DAD and 172 DAD

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each data channel. This description and the data channel's signal will be displayed in the status box while data is being collected during an application run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected. There are eight data channels available (labeled 17X Channel 1 through 17X Channel 8, where X is 1 or 2 dependent on the model of the detector). The maximum number of channels per configuration that can be used is eight.	171 Channel 1 172 Channel 1	N/A
Data Rate (points/sec)	The number of data points collected per second for all channels. One rate is set for all channels. The recommended setting is between 5 and 10 points/sec.	10	1–10
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run. There are two Outputs available (labeled 1, 2) and two Inputs available (labeled A, B).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Detector	N/A
Instrument Serial Number	The serial number of the detector.		

Flexar SQ 300 MS Detector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each channel. This description and the channel's signal will be displayed in the status box while data is being collected during an application run if the Use check box is selected for that channel. The Use check box for Channel 1 defaults selected. There are seven channels available (labeled MS Channel 1 through MS Channel 7). The maximum number of channels per configuration that can be used is eight.	MS Channel 1	N/A
Source Type	Specify the source type as either Electrospray or APCI.	Electrospray	Electrospray APCI
Data Rate (points/sec)	The number of times per second that a cycle of full scan and all SIMs is performed. For the maximum recommended scan range for each data rate, refer to **Recommended Scan Range (High m/z - Low m/z) on page 726**	5	2, 5, 10
Units	The user unit that corresponds to the TIC (Total Ion Count) value indicated and the label for those units. Data is scaled, plotted, and analyzed according to selected these units. All calculations (i.e., heights and areas) are reported according to these units. Units are shown on the graph axis (while running and in reports). Multiple graph axes are displayed if different user units are set for different data channels. A symbol is displayed on the graph axis to indicate which data channel is using that axis.	1 TIC = 1 TIC	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	MS Detector	N/A
Instrument Serial Number	The serial number of the detector.	Mass Spec Single Quad	Mass Spec Single Quad

VERITY 1810 Conductivity and pH Monitor

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each data channel. This description and the data channel's signal will be displayed in the status box while data is being collected during an Application Run if the Use check box is selected for that data channel. The Use check box for 1810 Conductivity Channel defaults selected. There are three data channels available: Conductivity, pH, and Temperature.	N/A	N/A
Data Rate (points/sec)	The number of data points collected per second for all channels. One rate is set for all channels.	5	2, 5, 10
Instrument Name	The name that will be used to identify this instrument.	Detector	N/A
Instrument Serial Number	The serial number of the instrument.	N/A	N/A

VERITY 1741 UV-VIS Detector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each data channel. This description and the data channel's signal will be displayed in the status box while data is being collected during an Application Run if the Use check box is selected for that data channel. Select the Use check box next to each data channel that will be used. The Use check box for Data Channel 1 defaults selected. If the detector will be run in scan mode, up to eight channels can be used. If monitoring specific UV or VIS wavelengths, up to four channels can be used. The maximum number of channels per configuration that can be used is eight.	1741 Channel x	
Data Rate (points/sec)	Select the data rate (5, 10, or 20 points/sec), which is the number of data points collected per second for all channels. One rate is set for all channels.	20	5, 10, 20
Units	Optionally set up user units. Data is scaled, plotted, and analyzed according to these units. All calculations (i.e., heights and areas) are reported according to these units. Units are shown on the graph axis (while running and in reports). Multiple graph axes are displayed if different user units are set for different data channels. A symbol is displayed on the graph axis to indicate which data channel is using that axis.	1 AU = 1 AU	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Detector	N/A
Instrument Serial Number	The serial number of the detector.	N/A	N/A

VERITY 1900 MS Detector and VERITY 1910 MS Detector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each channel. If known, the channel description (SIM, Target, Scan, etc.) is recommended. The maximum number of channels per configuration that can be used is eight, with a maximum of five MS channels.	MS Channel 1	N/A
Data Rate (points/sec)	When selecting the data rate, consider the scan range that will be used.	5	2, 5, 10

VERITY 1900 MS DETECTOR AND VERITY 1910 MS DETECTOR CONFIGURATION PROPERTIES CONTINUED ON PAGE 57

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Units	Optionally, set up user units. Data is scaled, plotted, and analyzed according to these units. All calculations (e.g., heights and areas) are reported according to these units. Units are shown on the graph axis while running and in reports, so it is possible to set one unit (TIC Scan) for the scan channel, and TIC for SIM channels.	1 TIC = 1 TICScan 1 TIC = 1 TIC	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	MS Detector	N/A
Instrument Serial Number	The serial number of the detector.	N/A	N/A

VERITY 1920 MS Detector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each channel. If known, the channel description (SIM, Target, Scan, etc.) is recommended. The maximum number of channels per configuration that can be used is eight, with a maximum of five MS channels.	MS Channel 1	N/A
Data Rate (points/sec)	When selecting the data rate, consider the scan range that will be used.	5	2, 5, 10
Units	Optionally, set up user units. Data is scaled, plotted, and analyzed according to these units. All calculations (e.g., heights and areas) are reported according to these units. Units are shown on the graph axis while running and in reports, so it is possible to set one unit for channel 1, one unit for channel 2, and another unit for channels 3–5. This will allow setting one unit (TIC Scan) for the scan channel (Channel 1) and different units for the other channels depending on data channel settings (e.g., TIC Scan for the negative scan channel (Channel 2), or TIC for SIM or target channels (Channel 2 and Channels 3–5).	1 TIC = 1 TICScan 1 TIC = 1 TIC	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	MS Detector	N/A
Instrument Serial Number	The serial number of the MS detector. The required format when manually entering the serial number for the VERITY 1920 MS is **MS CMS xxxx-xxxx**.	N/A	N/A

Virtual Detector

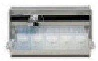
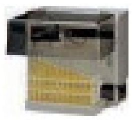
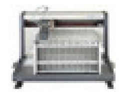
NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for Data Channel 1. This description and the data channel's signal will be displayed in the status box while data is being collected during an application run if the Use check box is selected. The Use check box for Data Channel 1 defaults selected.	Virtual Channel 1	N/A
Data Rate (points/sec)	The number of data points collected per second for the channel.	20	1–80
Instrument Name	The name that will be used to identify this instrument in a task.	Detector	N/A

The Virtual Detector is a special instrument used when collecting fractions by time or volume in the absence of another detector. TRILUTION LC requires use of a data instrument whenever fractions are being collected.

Using a Virtual Detector

Ensure that the configuration includes a fraction collector (if collecting by time or volume) and mobile phase pumps (if collecting by volume) in addition to the Virtual Detector. Set up the method to collect fractions by time or volume. For more information, refer to **How to Collect Fractions by Time on page 644** or **How to Collect Fractions by Volume on page 645**.

Fraction Collector

	202C Fraction Collector		FC 204 Fraction Collector
	206 Fraction Collector		Fraction Collection System
	FC 203B Fraction Collector		PrepFC Fraction Collector

FRACTION COLLECTOR PROPERTIES

202C, Fraction Collector, 206 Fraction Collector, FC 203B Fraction Collector, FC 204 Fraction Collector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Refer to How to Calculate Fraction Collection Delay Volume on page 725 for more information.	0	N/A
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run. There are two Outputs available (labeled 1, 2) and two Inputs available (labeled A, B). The 206 Fraction Collector has one additional Output (labeled 3). The 202C Fraction Collector does not have contacts.	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Fraction Collector	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–63
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–9

PrepFC Fraction Collector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Refer to How to Calculate Fraction Collection Delay Volume on page 725 for more information..	0	N/A
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are two Outputs available (labeled 1, 2) and four Inputs available (labeled A, B, C, D). Output 1 is used as an Event contact, Input C is an Advance contact, and Input D is a Divert contact.	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Fraction Collector	N/A

Fraction Collection System (FCS)

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Fraction Collector	The fraction collectors in the configuration.	N/A	N/A
VALVEMATE	The VALVEMATE or VALVEMATE II, selected from a drop-down list of VALVEMATEs and VALVEMATE IIs in the configuration, that the FCS will use.	N/A	N/A
Position	The valve position on the VALVEMATE or VALVEMATE II.	N/A	1–10, depending on the valve
Instrument Name	The name that will be used to identify this system in a task.	Fraction Collection System	N/A

The Fraction Collection System (FCS) is a group of instruments that are combined to allow fraction collection to multiple beds. An FCS consists of two or more fraction collectors and a VALVEMATE or VALVEMATE II. The configuration can only include one FCS.

How to Use an FCS

1. Drag two fraction collectors into the workspace (for example, a 215 Liquid Handler to be used as a fraction collector and an FC 204 Fraction Collector) and set the properties.
2. Drag a VALVEMATE or VALVEMATE II into the workspace and set the properties. The VALVEMATE or VALVEMATE II should be plumbed and ready to go at this point.
3. Drag a Fraction Collection System into the workspace.
   a. On the **Setup** tab:
      - In the **VALVEMATE** field, click the arrow and then select the VALVEMATE or VALVEMATE II from the drop-down list.
      - In the **Position** field, click the arrow and then select the VALVEMATE or VALVEMATE II valve position from the drop-down list that corresponds to the first fraction collector.

      NOTE When using a 2-position valve on a VALVEMATE, choose 1 for position 0 or 2 for position 1.

   b. On the **General** tab inn the **Instrument Name** field, type a name for the FCS.
   c. Repeat step 3 for additional fraction collectors.

Injector

	819 Injection Module		845Z Injection Module

INJECTOR PROPERTIES

819 Injection Module

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Injection Module Name	The name that will be used to identify this injection module in a task.	Injector	N/A

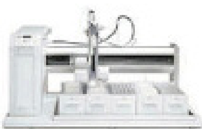
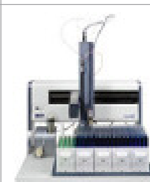
GSIOC ID	A unique numerical address that must be known to the injection module and to the software that allows the software to communicate with the injection module.	29	20–29

845Z Injection Module

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Instrument Name	The name that will be used to identify this injection module in a task.	Injector	N/A
GSIOC ID	A unique numerical address that must be known to the injection module and to the software that allows the software to communicate with the injection module.	29	20–29

For a list of supplied tasks for the 845Z Injection Module, refer to 845Z Injection Module Tasks on page 256.

Liquid Handler

	215 Liquid Handler		233 XL Sample Injector		GX-271 Analytical Liquid Handler
	215 Liquid Handler without Pump		234 Autoinjector		GX-271 Liquid Handler without Pump
	231 XL Sample Injector		235 Autoinjector		GX-271 Prep Liquid Handler
	232 XL Sample Injector		GX-241 II Liquid Handler without Pump		GX-281 Analytical Liquid Handler
	GX-281 Liquid Handler without Pump		GX-281 Prep Liquid Handler		

LIQUID HANDLER PROPERTIES

215 Liquid Handler and 215 Liquid Handler without Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	125 mm Z-Arm	125 mm Z-Arm, 175 mm Z-Arm
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	0–175
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122	Range provided on-screen; calculated based on Z Clamp Height and Z Arm Type.
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Contact your local Gilson representative for help determining the value to enter for the system configuration. For a configuration in which a channel on the Flexar SQ 300 MS Detector is the primary channel, the fraction collection delay volume must be calculated, using the following equation: Fraction Collection Delay Volume = Fraction Collection Delay Volume (determined by your local Gilson representative) + [Time needed to align MS peaks with UV peaks * Mobile Phase Flow Rate]	0	N/A
ID	A unique identifier to address syringes on the instrument. (215 Liquid Handler)	A	A
Syringe Name	A unique name to address syringes on the instrument. (215 Liquid Handler)	A	N/A
Size (µL)	The capacity of each installed syringe. (215 Liquid Handler)	1000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking. (215 Liquid Handler)	Reservoir	N/A
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are four outputs available (labeled 1, 2, 3, 4), four inputs available (labeled A, B, C, D), and one 24V output.	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

231 XL Sample Injector/232 XL Sample Injector/233 XL Sample Injector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123 mm Z-Arm	56 mm Z-Arm, 123 mm Z-Arm, 183 mm Z-Arm (232 and 233 XL Sample Injector)
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	-2	Range provided on-screen; calculated based on Z Clamp Height and Z Arm Type.
Injection Valve Location	The location of the installed injection valve. (233 XL Sample Injector)	Right	Left, Right
Fraction Valve	The type of fraction collection valve installed. The switching valve is built-in to the instrument. The low pressure valve is installed on the Z-arm. (233 XL Sample Injector)	Switching	Switching, Low Pressure
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Contact your local Gilson representative for help determining the value to enter for the system configuration.	0	N/A
Contacts	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. There are eight Outputs available (labeled 1–8) and five Inputs available (labeled 1–5).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–31

234 Autoinjector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	-2	-56 to 0
ID	A unique identifier to address the syringe on the instrument.	A	A
Syringe Name	A unique name to address the syringe on the instrument.	A	N/A
Size (µL)	The capacity of the installed syringe.	500	100, 500
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are two outputs available (labeled 1, 2) and three inputs available (labeled A, B, C).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–63

235 Autoinjector

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
ID	A unique identifier to address the syringe on the instrument.	A	A
Syringe Name	A unique name to address the syringe on the instrument.	A	N/A
Size (µL)	The capacity of the installed syringe.	500	100, 250, 500, 1000
	Pause instrument when door is opened.	Cleared	
	Interior light is turned on.	Selected	
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are four outputs available (labeled 1, 2, 3, 4) and four inputs available (labeled A, B, C, D).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	20	20-29

GX-241 II Liquid Handler without Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Z Clamp Height (mm)	This number corresponds to where the top of the mounting bracket is on the vertical ruler on the Z-arm.	125 mm	5–135 mm
Z Safe Height (mm)	The Z-height to which the probe will move before moving in the X or Y direction.	120 mm	The range updates dynamically based on the Z Clamp Height setting. The top end of the range is always 3.57 mm less than the Z Clamp Height to account for the probe guide insert that extends below the Z-foot.
GX Direct Inject Valve	Indicate the size of the injection valve installed.	Not Installed	Not Installed, 1/16"
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Contact your local Gilson representative for help determining the value to enter for the system configuration.	0	N/A

GX-241 II LIQUID HANDLER WITHOUT PUMP CONFIGURATION PROPERTIES CONTINUED ON PAGE 64

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Contacts	On the Contacts tab, optionally name any contacts that will be used. Additionally, indicate whether each output contact should open, close, or remain in the same state on error. The default is Open for 24V outputs and No Change for outputs. To set up a Safety Stop, select the box next to the input name. When that input is presented with a contact closure, an error code 12 (Safety Stop Activated) appears on the instrument front panel display and the run stops. Optionally, type a description for the solenoid. There are two solenoids available (labeled 1, 2).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
Instrument Serial Number	The serial number of the instrument.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A

GX-271 Analytical Liquid Handler/GX-271 Liquid Handler without Pump/ GX-271 Prep Liquid Handler

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Probe Type (mm)	If the stop pin was inserted in S1, select 56 mm Probe. If the stop pin was inserted in S2, select 125 mm Probe. If no stop pin was used, select 175 mm Probe.	125 mm Probe (GX-271 Analytical) 175 mm Probe (GX-271 Prep)	56 mm Probe, 125 mm Probe, 175 mm Probe
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125 (GX-271 Analytical) 175 (GX-271 Prep)	110–260
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122 (GX-271 Analytical) 172 (GX-271 Prep)	Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location to where the instrument home completes.	Rear	Front, Center, Rear
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	1.1 (GX-271 Analytical) 30 (GX-271 Prep)	0.5, 1.1, 5, 10.5 1.1, 5, 10.5, 30, 50 (GX-271 Prep)
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe. (GX-271 Analytical and GX-271 Prep)	0	0–1000000
GX Direct Inject Valve	Indicate the size of the injection valve installed.	1/16" (GX-271 Analytical) 1/8" (GX-271 Prep)	Not Installed, 1/8", 1/16"
Waste	Indicate which port will be used for waste. (GX-271 Analytical and GX-271 Prep)	Port 1	Port 1, Port 2, Port 3, Port 4, Port 5, Port 6

GX-271 Analytical Liquid Handler/GX-271 Liquid Handler without Pump/
GX-271 Prep Liquid Handler Configuration Properties Continued on Page 65

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Ports 1–6	Optionally, type a description of the solvent valve port. Five ports are available. One port is used for waste. (GX-271 Analytical and GX-271 Prep)	N/A	N/A
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Contact your local Gilson representative for help determining the value to enter for the system configuration. For a configuration in which a channel on the Flexar SQ 300 MS Detector is the primary channel, the fraction collection delay volume must be calculated, using the following equation: Fraction Collection Delay Volume = Fraction Collection Delay Volume (determined by your local Gilson representative) + [Time needed to align MS peaks with UV peaks * Mobile Phase Flow Rate]	0	N/A
Output	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are two outputs available (labeled 1, 2). Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change.	N/A	N/A
24V Output	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are two 24V outputs available (labeled 1 and 2). Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is Open.	N/A	N/A

GX-271 Analytical Liquid Handler/GX-271 Liquid Handler without Pump/
GX-271 Prep Liquid Handler Configuration Properties Continued on Page 66

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Input	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are two inputs available (labeled A, B).	N/A	N/A
Solenoid	Optionally, type a description for the solenoid. There are two solenoids available (labeled 1, 2).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
Instrument Serial Number	The serial number of the instrument.	N/A	N/A
Pump Serial Number	The serial number of the GX Solvent System. (GX-271 Analytical and GX-271 Prep)	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A

GX-281 Analytical Liquid Handler/GX-281 Liquid Handler without Pump/ GX-281 Prep Liquid Handler

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Probe Type (mm)	This is the Z travel height.	125 mm Probe (GX-281 Analytical) 175 mm Probe (GX-281 Prep, GX-281 without Pump)	125 mm Probe, 175 mm Probe, 210 mm Probe
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125 (GX-281 Analytical) 175 (GX-281 Prep, GX-281 without Pump)	95–300
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122 (GX-281 Analytical) 172 (GX-281 Prep, GX-281 without Pump)	0-175 Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location to where the instrument home completes.	Left 1	Left 1, Left 2, Left 3, Right 1, Right 2, Right 3
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	1.1 (GX-281 Analytical) 30 (GX-281 Prep)	0.5, 1.1, 3, 5, 10.5 1.1, 3, 5, 10.5, 30, 50
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe. (GX-281 Analytical and GX-281 Prep)	0	0–1000000

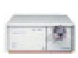
GX-281 Analytical Liquid Handler/GX-281 Liquid Handler without Pump/ GX-281 Prep Liquid Handler Configuration Properties Continued on Page 67

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Left GX Direct Inject Valve	Indicate the size of the injection valve installed in the left position.	1/16" (GX-281 Analytical) 1/8" (GX-281 Prep, GX-281 without Pump)	Not Installed, 1/8", 1/16"
Right GX Direct Inject Valve	Indicate the size of the injection valve installed in the right position.		
Z Injection Valve	Indicate whether (checked) or not (cleared) a Z Injection Valve is installed.	Cleared	N/A
Waste	Indicate which port will be used for waste. (GX-281 Analytical and GX-281 Prep)	Port 1	Port 1, Port 2, Port 3, Port 4, Port 5, Port 6
Ports 1–6	Optionally, type a description of the solvent valve port. Five ports are available. One port is used for waste. (GX-281 Analytical and GX-281 Prep)	N/A	N/A
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. Contact your local Gilson representative for help determining the value to enter for the system configuration. For a configuration in which a channel on the Flexar SQ 300 MS Detector is the primary channel, the fraction collection delay volume must be calculated, using the following equation: Fraction Collection Delay Volume = Fraction Collection Delay Volume (determined by your local Gilson representative) + [Time needed to align MS peaks with UV peaks * Mobile Phase Flow Rate]	0	N/A
Output	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are four outputs available (labeled 1, 2, 3, 4). Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change.	N/A	N/A

GX-281 Analytical Liquid Handler/GX-281 Liquid Handler without Pump/
GX-281 Prep Liquid Handler Configuration Properties Continued on Page 68

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
24V Output	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are four 24V outputs available (1, 2, 3, and 4). Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is Open.	N/A	N/A
Input	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. There are four inputs available (labeled A, B, C, D).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	25	20–29

Mobile Phase

	305 Pump		VERITY 3011 Pump		331 Prep-Scale HPLC Pump
	306 Pump		321 HPLC Pump		332 Prep-Scale HPLC Pump
	307 Pump		322 HPLC Pump		333 Prep-Scale HPLC Pump
			VERITY 3240 Pump		334 Prep-Scale HPLC Pump

MOBILE PHASE PROPERTIES

305 Pump/306 Pump/307 Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Head Size	The size of the pump head fitted to the pump.	5	5, 10, 25, 50, 100, 200
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump that is being ramped in gradient templates. One HPLC pump must be selected as organic in each configuration.	N/A	N/A
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. The software uses the compressibility setting to correct the flow characteristics of the system. Refer to **Compressibility on page 722** for compressibility values for some common mobile phase solvents.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For Analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phase.	125	125–999
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. The 305 Pump and 306 Pump have five outputs (labeled 1, 2, 3, High, and Low). The 305 Pump has two inputs (labeled 1 and 2). The 307 Pump has four outputs (1, 2, 3, and 4) and two inputs (labeled 1 and 2).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Mobile Phase	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

METHOD BUILDER - CONFIGURATION

321 HPLC Pump and 322 HPLC Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Head Type	The type of pump head fitted to the pump.	H1	H1, H2
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump that is being ramped in gradient templates. One HPLC pump must be selected as organic in each configuration.	N/A	N/A
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. The software uses the compressibility setting to correct the flow characteristics of the system. Refer to **Compressibility on page 722** for compressibility values for some common mobile phase solvents.	34	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phase.	125	125–999
Mixing Chamber Size (uL)	Physical volume setting for the dynamic mixer.	1000	200–2200

321 HPLC PUMP AND 322 HPLC PUMP CONFIGURATION PROPERTIES CONTINUED ON PAGE 71

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Solvent Valve Configuration	Indicate whether a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	B1	B1, B2, B3, B4
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. The 321 HPLC Pump has four outputs (labeled 1, 2, 3, and 4) and two inputs (labeled 1 and 2).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Mobile Phase	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63 (321 HPLC Pump) 0-9 (322 HPLC Pump)

331 Prep-Scale HPLC Pump / 332 Prep-Scale HPLC Pump / 333 Prep-Scale HPLC Pump / 334 Prep-Scale HPLC Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Head Type	The type of pump head fitted to the pump.	H2 H3	H2 (331 and 332 Prep-Scale HPLC Pump) H3 (333 and 334 Prep-Scale HPLC Pump)
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump that is being ramped in gradient templates. One HPLC pump must be selected as organic in each configuration.	N/A	N/A
Solvent Valve Configuration	Indicate whether a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected for the Solvent Valve Configuration.	1	1, 2, 3, 4

331 PREP-SCALE HPLC PUMP / 332 PREP-SCALE HPLC PUMP / 333 PREP-SCALE HPLC PUMP / 334 PREP-SCALE HPLC PUMP
CONFIGURATION PROPERTIES CONTINUED ON PAGE 72

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. The software uses the compressibility setting to correct the flow characteristics of the system. Refer to **Compressibility on page 722** for compressibility values for some common mobile phase solvents..	34	N/A
Mixing Chamber Size (uL)	Physical volume setting for the dynamic mixer. (331 and 332 Prep-Scale HPLC Pump)	1000	200–2200
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. The 331 and 333 Prep-Scale HPLC Pumps have four outputs (labeled 1, 2, 3, and 4) and two inputs (labeled 1 and 2).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Mobile Phase	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1 2	0–63 (331 and 333 Prep-Scale HPLC Pump) 0-9 (332 and 334 Prep-Scale HPLC Pump)

VERITY 3011 Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
SETUP			
Head Type	The type of pump head fitted to the pump.	5	5, 10
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump that is being ramped in gradient templates. One HPLC pump must be selected as organic in each configuration. The function of the pump in the HPLC system is automatically selected to be the organic mobile phase pump if it is the only mobile phase pump in the configuration	N/A	N/A
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. The software uses the compressibility setting to correct the flow characteristics of the system.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. Slower speeds may be necessary when pumping viscous mobile phase.	125	125–1000

VERITY 3011 PUMP CONFIGURATION PROPERTIES CONTINUED ON PAGE 74

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
PRESSURE			
Data Channels	Optionally, type a unique description for the pressure channel. This description and the current pressure will be displayed in the status box and on the chromatogram while data is being collected during an application run if the Use check box is selected. The units for pressure (bar, psi, or MPa) are set in Unit Settings.	Mobile Phase Pressure	N/A
Data Rate (points/sec)	The number of data points collected per second for the channel.	10	10
CONTACTS			
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. The VERITY 3011 Pump has two outputs (24V Output 1 and Output 2) and four inputs (labeled Input 1, Input 2, Input 3, and Input 4).	N/A	N/A
GENERAL			
Instrument Name	The name that will be used to identify this instrument in a task.	Mobile Phase	N/A
Instrument Serial Number	The serial number of the pump. Scanning for the pump automatically populates the serial number field and is recommended, but typing the serial number is also an option. The serial number is located on the right side of the pump.	N/A	N/A

VERITY 3240 Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
SETUP			
Head Size	The type of pump head fitted to the pump.	150	150
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase

VERITY 3240 PUMP CONFIGURATION PROPERTIES CONTINUED ON PAGE 75

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
HEAD A			
Organic Pump	The organic solvent is the solvent that is being ramped in gradient templates. If Head A (on the left) is pumping the organic solvent, select the check box for Organic (Head A). One solvent must be selected as organic in each pump configuration.	N/A	N/A
Solvent Valve Configuration	The solvent valve configuration fitted to the pump.	No Valve	No Valve, 2 Solvents, or 4 Solvents
Valve Solvent Selection	The solvent valve position—Valve Solvent Selection 1, 2, 3, or 4.	1	1, 2, 3, 4
Solvent Choice	Identifies the solvent that will be delivered from the selected solvent valve position. Optionally, select Other Liquid and then type the name of the solvent in the Solvent Name field. The number of valve positions available is dependent on the solvent valve configuration selected on this tab. TRILUTION LC remembers the valve position selected when the method is saved and uses that as the default in the method at run time.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the selected solvent valve position. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
HEAD B			
Organic Pump	The organic solvent is the solvent that is being ramped in gradient templates. If Head B (on the right) is pumping the organic solvent, select the check box for Organic (Head B). One solvent must be selected as organic in each pump configuration..	N/A	N/A
Solvent Valve Configuration	The solvent valve configuration fitted to the pump.	No Valve	No Valve, 2 Solvents, or 4 Solvents
Valve Solvent Selection	The solvent valve position—Valve Solvent Selection 1, 2, 3, or 4.	1	1, 2, 3, 4

VERITY 3240 PUMP CONFIGURATION PROPERTIES CONTINUED ON PAGE 76

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Solvent Choice	Identifies the solvent that will be delivered from the selected solvent valve position. Optionally, select Other Liquid and then type the name of the solvent in the Solvent Name field. The number of valve positions available is dependent on the solvent valve configuration selected on this tab. TRILUTION LC remembers the valve position selected when the method is saved and uses that as the default in the method at run time.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the selected solvent valve position. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
PRESSURE			
Data Channels Pressure Channel	Optionally type a unique description for the pressure channel. This description and the current pressure will be displayed in the status box and on the chromatogram while data is being collected during an application run if the Use check box is selected. The units for pressure (bar, psi, or MPa) are set in Unit Settings, which is accessible from the TRILUTION LC main menu/home screen.	Mobile Phase Pressure	N/A
Data Rate (points/sec) Pressure Channel	Select the number of data points collected per second (1, 2, or 5) for the pressure channel.	2	1, 2, 5
GENERAL			
Instrument Name	The name that will be used to identify this instrument in a task.	Mobile Phase	N/A
Instrument Serial Number	The serial number of the pump. Scanning for the pump automatically populates the serial number field and is recommended, but typing the serial number is also an option. The serial number is located on the rear panel of the pump.	N/A	N/A

Switching Valve

	VALVEMATE		VALVEMATE II

SWITCHING VALVE PROPERTIES

VALVEMATE and VALVEMATE II

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Valve Positions	The number of positions.	2	2, 4, 6, 8 (VALVEMATE) 2, 4, 6, 8, 10 (VALVEMATE II)
Instrument Name	The name that will be used to identify this instrument in a task.	Valve	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	35	30–39

For a list of supplied tasks for the VALVEMATE and VALVEMATE II, refer to **VALVEMATE®/VALVEMATE® II Tasks on page 273.**

Communication

	506C System Interface		606 GSIOC to RS-232 Converter

COMMUNICATION PROPERTIES

506C System Interface

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Data Channels	Optionally, type a unique description for each data channel. This description and the data channel's signal will be displayed in the status box while data is being collected during an application run if the Use check box is selected for that data channel. There are four data channels available (labeled A, B, C, D). The maximum number of channels per configuration that can be used is eight.	506C Channel A	N/A
Data Rate (points/sec)	The number of data points collected per second for the channel. There are four data channels available (labeled A, B, C, D).	20	1–80
Units	The user unit that corresponds to the mV value indicated and the label for those units. Data is scaled, plotted, and analyzed according to these units. All calculations (i.e., heights and areas) are reported according to these units. Units are shown on the graph axis (while running and in reports). Multiple graph axes are displayed if different user units are set for different data channels. A symbol is displayed on the graph axis to indicate which data channel is using that axis.	1 mV = 1 mV	N/A
Contacts	Optionally, type a description for the contacts. This description and the contacts' status will be displayed at all times in the status box during an application run. There are six outputs (labeled 1–6), four inputs (labeled A, B, C, D), and four analog inputs (labeled A, B, C, D).	N/A	N/A

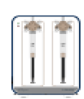
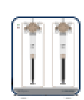
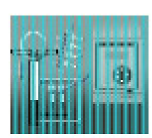
506C SYSTEM INTERFACE CONFIGURATION PROPERTIES CONTINUED ON PAGE 78

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Instrument Name	The name that will be used to identify this instrument in a task.	Contact	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	63	0–63

606 GSIOC to RS-232 Converter

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Baud Rate	The speed at which information is sent.	19200	75, 110, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200, 38400
Parity	The number of 1s in the group of bits.	Even	Even, Odd, None, M(1), S(0)
Bits per Character	The number of binary digits that constitutes a character.	7	5, 6, 7, 8
Stop Bits	The number of bits to be transmitted after each character.	1	1, 2
Handshake	The device with which information is being transmitted or exchanged.	None	Hardware, Software, Both, None
Instrument Name	The name that will be used to identify this instrument in a task.	Communication	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	61	0–63

Syringe Pump

	307 Make Up Pump		VERITY 3011 Make Up Pump
	402 Pump Dual		VERITY 4020 Syringe Pump
	402 Pump Dual with Tee		VERITY 4120 Dual with Tee Syringe Pump
	402 Pump Single		VERITY 4220 Syringe Pump
	GX Syringe Pump		Virtual Pumping System

SYRINGE PUMP PROPERTIES

307 Make Up Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Head Size	The size of the pump head fitted to the pump.	5	5, 10, 25, 50, 100, 200
Pump Usage	Indicate the function of the pump in the system.	Make Up	Make Up
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	N/A	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. The software uses the compressibility setting to correct the flow characteristics of the system. Refer to **Compressibility on page 722** for compressibility values for some common solvents.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke.	125	125–999
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. The 307 Make Up Pump has four outputs (1, 2, 3, and 4) and two inputs (labeled 1 and 2).	N/A	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Make Up Pump	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

402 Pump Dual/402 Pump Dual with Tee/402 Pump Single

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Syringes to Use	The syringes that will be used when this instrument is selected as the Pump in a task.	A	A, B (402 Dual)
ID	A unique identifier to address syringes on the instrument.	A	N/A A, B (402 Dual)
Syringe Name	A unique name to address syringes on the instrument.	A A, B (402 Dual)	N/A
Size (µL)	The capacity of each installed syringe.	1000	100, 250, 500, 1000, 5000, 10000, 25000

402 PUMP DUAL/402 PUMP DUAL WITH TEE/402 PUMP SINGLE CONFIGURATION PROPERTIES CONTINUED ON PAGE 80

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe.	Reservoir	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Pump	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	0	0–31

GX Syringe Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
ID	A unique identifier to address syringes on the instrument.	A	N/A
Syringe Name	A unique name to address syringes on the instrument.	A	N/A
Size (µL)	The capacity of each installed syringe.	1000	100, 250, 500, 1000, 5000, 10000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe.	Reservoir	N/A
Pump Name	The name that will be used to identify this instrument in a task.	Pump	N/A
Pump Serial Number	Scanning for the pump automatically populates the serial number field and is recommended, but typing the serial number is also an option. The serial number is located on the rear panel of the GX Syringe Pump.	N/A	N/A
Pump Name	The name that will be used to identify this instrument in a task.	Pump	Pump Name

VERITY 3011 Make Up Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Setup			
Head Type	The type of pump head fitted to the pump.	5	5, 10
Pump Usage	Indicate the function of the pump in the HPLC system.	Make Up	Make Up
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if **Other Liquid** is selected from the **Solvent List**.	N/A	N/A

VERITY 3011 MAKE UP PUMP CONFIGURATION PROPERTIES CONTINUED ON PAGE 81

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. The software uses the compressibility setting to correct the flow characteristics of the system.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. Slower speeds may be necessary when pumping viscous mobile phase.	125	125–1000
Pressure			
Data Channels	Optionally, type a unique description for the pressure channel. This description and the current pressure will be displayed in the status box and on the chromatogram while data is being collected during an application run if the Use check box is selected. The units for pressure (bar, psi, or MPa) are set in Unit Settings.	Make Up Pump Pressure	N/A
Data Rate (points/sec)	The number of data points collected per second for the channel.	10	10
Contacts			
Contacts	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an application run. The 3011 Pump has two outputs (24V Output 1 and Output 2) and four inputs (labeled Input 1, Input 2, Input 3, and Input 4).	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a task.	Make Up Pump	N/A
Instrument Serial Number	The serial number of the pump. Scanning for the pump automatically populates the serial number field and is recommended, but typing the serial number is also an option. The serial number is located on the right side of the pump.	N/A	N/A
Instrument Serial Number	The serial number of the pump. The serial number is located on the right side of the syringe pump.	N/A	N/A

VERITY 4020 Syringe Pump/VERITY 4120 Dual with Tee Syringe Pump/ VERITY 4220 Syringe Pump

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Syringes to Use	The syringes that will be used when this instrument is selected as the pump in a task. (VERITY 4220 Syringe Pump only)	A	A, B
ID	A unique identifier to address syringes on the instrument.	A	A (Single and dual with tee syringe pumps) A, B (Dual syringe pumps)
Syringe Name	A unique name to address syringes on the instrument.	A (Single and dual with tee syringe pumps) A, B (Dual syringe pumps)	N/A
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for each syringe size, see **Flow Rates on page 725**.	1000 (VERITY 4020 Syringe Pump, VERITY 4220 Syringe Pump) 10000 (VERITY 4120 Dual with Tee Syringe Pump)	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe.	Reservoir	N/A
Right Syringe Size (µL)	The capacity of the right syringe (B) on a VERITY 4120 Dual with Tee Syringe Pump. For a range of suggested flow rates for each syringe size, see **Flow Rates on page 725**.	500	100, 250, 500, 1000, 5000, 10000, 25000
Instrument Name	The name that will be used to identify this instrument in a task.	Pump	N/A

Virtual Pumping System

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
Probe	The probes in the configuration using the VPS.		Probe
Syringe	The syringes in the configuration using the VPS.		Syringe
VALVEMATE	The VALVEMATE that the VPS will use (if any).		VALVEMATE
Position	The valve position (A–H) on the VALVEMATE. Required when a VALVEMATE is selected.		Position

The Virtual Pumping System (VPS) is a group of instruments that are combined to perform as a pumping system. A VPS consists of a probe from a liquid handler and syringes. Optionally, a VALVEMATE may be included to provide additional fluid paths. The configuration can include one or more VPS.

Using a VPS

For a system using multiple reservoir solutions:

1. Drag and drop a liquid handler with an installed single syringe pump into the workspace (for example, 215 Liquid Handler) and set the properties.
2. Drag and drop a VALVEMATE or VALVEMATE II into the workspace and set the properties. Your VALVEMATE or VALVEMATE II should be plumbed and ready to go at this point.

3. Drag and drop a Virtual Pumping System into the workspace.
    a. In the **VALVEMATE** field, click the arrow and then select the VALVEMATE or VALVEMATE II from the drop-down list.
    b. In the **Position** field, click the arrow and then select the VALVEMATE or VALVEMATE II valve position from the drop-down list that corresponds to the first reservoir solution.
    c. In the **Pump Name** field, type a name for the first VPS. This is a good place to reference the first reservoir solution. This name will be used to identify the VPS in a task.
4. Repeat step 3 for additional reservoirs.

Single-Probe, Multiple-Syringe Configuration

1. Drag and drop a liquid handler into the workspace and set the properties.
2. Drag and drop a VALVEMATE into the workspace and set the properties. Your VALVEMATE or VALVEMATE II should be plumbed and ready to go at this point.
3. Drag and drop the pumps into the workspace and set the properties. Set a unique GSIOC ID for each.
4. Drag and drop a Virtual Pumping System into the workspace.
    a. Select on a **Syringe** Name and then click the up or down arrow to associate the syringe with a probe.
    b. In the **VALVEMATE** field, click the arrow and then select the VALVEMATE or VALVEMATE II from the drop-down list.
    c. In the **Position** field, click the arrow and then select the VALVEMATE or VALVEMATE II valve position from the drop-down list that corresponds to the syringe.
    d. In the **Pump Name** field, type a name for the VPS. This name will be used to identify the VPS in a task.
5. Repeat step 4 for each additional syringe.

Modify a Configuration

A configuration can be modified by doing any of the following:

- adding new instruments to an existing configuration
- removing instruments from an existing configuration
- modifying the instrument properties of the instruments in a configuration
- browsing for an existing configuration to replace the current configuration

Remove an Instrument from a Configuration

To remove an instrument from a configuration, do either of the following:

- Right-click on an instrument in the workspace and then select **Remove**.
- Select an instrument in the workspace and then press the **DELETE** key.

METHOD BUILDER - BED LAYOUT

A bed layout serves as one of the building blocks of a method and consists of:

- a template
- footprints
- racks
- wells

To create a bed layout, refer to How to Create a Bed Layout on page 85.

Bed Layout Tab Window

The Bed Layout tab window in the Method Builder is a graphical interface used to create a bed layout.

The Bed Layout tab window includes:

- Zone Management
- Zone Numbering Pattern
- Workspace
- Color Management

Zone Management

Use Zone Management to add, modify, or delete zones, and to select zones for inactive and active wells.

To create a bed layout, refer to How to Create a Bed Layout on page 85.

Zone Numbering Pattern

Allows for selecting how blocks of wells will be numbered.

To select a pattern for numbering the wells:

1. Select the icon for the numbering pattern.
2. Select the icon for the starting corner.

Workspace

Forms the area to create or view a bed layout and displays the bed layout name.

Color Management

Select to open a dialog for changing the colors used in the bed layout workspace.

How to Create a Bed Layout

In the **Method Builder**, first create a configuration (refer to How to Create a Configuration on page 52), and then select the **Bed Layout** tab.

Optionally, right-click on the bed layout name in the **Configured Instruments** panel and then select **Rename Bed Layout** to rename the bed layout.

Select a Template

Do one of the following:

- To use the displayed template, continue to Add a Rack/Rinse Station/Injection Port on page 85.
- Right-click on the bed layout name in the **Configured Instruments** panel, select **New Bed Layout**, and then select a bed layout template. Templates are filtered for the associated instrument. Select **OK**. The window is refreshed to display the new template.

Define a Zone

To define a Zone:

1. Under **Zone Management**, click **Add Zone**.
2. Type a unique name, select colors, and select the starting number.
   - **Name**: It is possible to create multiple zones, but each must have a unique name.
   - Starting: The first number that will be used when numbering wells in the zone.
   - **Active Text Color**: The color that is used (either black or white, depending on the active zone color) for the numbers of the wells when the zone is active.
   - **Active Zone Color**: The color used for the wells in the zone when it is active. As new zones are added, the Active Zone Color automatically increments. The zone becomes active when it is selected from the Zone drop-down menu. Only one zone can be active at a time. Refer to the Sample in the dialog to see the Active Text Color on the Active Zone Color.
   - **Inactive Text Color**: The color that is used for the numbers of the wells when the zone is inactive.
   - **Inactive Zone Color**: The color used for the wells in the zone when it is inactive. The zone becomes inactive when another zone is selected from the Zone drop-down menu. Multiple zones can be inactive at one time. The default Inactive Text Color is Black. The default Inactive Zone Color is light blue. Refer to the sample in the dialog to see the Inactive Text Color on the Inactive Zone Color.
3. Select **OK**. The zone is listed under **Zone Management**.

Add a Rack/Rinse Station/Injection Port

1. On the template, select a footprint. The footprint is highlighted with a red border.
2. To add a rack, rinse station, or injection port:
   a. Double-click the footprint.
   b. Select a rack and then select **OK** or double-click the rack name. The window is refreshed to display the rack, rinse station, or injection port on the template.

Select a Zone Numbering Pattern

To select a pattern for numbering the wells:

1. Select the icon for the numbering pattern.
2. Select the icon for the starting corner.

Number Wells in Zone

To add wells to a zone, do any of the following:

- Hold **CTRL** and then click on individual wells to number them in the order selected.
- Select and drag over blocks of wells to number them according to the numbering pattern selected.
- When using multiple layer racks, hide one layer to assign zones to another. To do this, select/highlight the element then right click and select **Hide** from the menu. Select **Show All** to unhide the elements.

How to Modify a Bed Layout

Modify a bed layout by doing any of the following:

- adding new racks, wells, or zones to the template
- deleting racks from the workspace
- deleting zones
- changing the zone numbering pattern
- replacing racks in the workspace
- adding wells to zones
- clearing wells from zones

To modify a bed layout:

1. Open the method and then select the **Bed Layout** tab.
2. Right-click on the bed layout name in the **Configured Instruments** panel, select **Browse Bed Layout**, and then select an existing bed layout to replace the current bed layout in the method.

   Or

   Open the method and then select the **Bed Layout** tab.
3. Do any of the following:
   a. Add new racks, wells, or zones to the template; refer to How to Create a Bed Layout on page 85.

NOTE	When modifying a bed layout, you may wish to select wells without adding them to a zone. To do this, right-click in the Zone Management panel, select Deselect All Zones, and then select the wells.

   b. Delete racks from the workspace:
      1. Select to select/highlight the rack.
      2. Right-click and then select **Delete** or press the **DELETE** key.

   c. Delete wells from all zones or from the active zone:
      1. Select the wells.
      2. Right-click and then select either **Clear Selected Wells from Active Zone** or **Clear Selected Wells from All Zones**.

   d. Clear all wells from all zones or clear wells from the active zone:
      1. Select to select any element.
      2. Right-click and then select either **Clear All Zones** or **Clear Active Zone**.

   e. Delete zones:
      1. Select the zone to be deleted.
      2. Select **Delete** or press the **DELETE** key.

   f. Change the colors. Double-click the zone name to modify.
   g. Change the zone numbering pattern; refer to Zone Numbering Pattern on page 84.

METHOD BUILDER - CONTROL

The **Method Builder - Control** tab is where the sequence of tasks to execute and the gradient or isocratic condition are specified for the method.

To begin creating a method, select **Method** from the **Liquid Chromatography** menu.

For information about how to create a method, refer to How to Create a Method on page 43.

Key concepts to understand about the Method Builder - Control tab are:

- How to Create Gradient or Isocratic Conditions on page 98
- How to Simulate Fraction Collection by Slope or Level on page 100

Control Tab Window

The **Control tab** window in the **Method Builder** is a graphical interface used to organize the tasks used in a method.

The **Control tab** window includes:

- Tasks Palette
- Workspace Tab
- Error Handling Tab

For information about how to create a method, refer to How to Create a Method.

Tasks Palette

The **Tasks** palette displays sorted tasks that can be added to the control. Specify task conditions for controlling instruments.

One default group (Auxiliary) exists for every method. Auxiliary tasks are not specific to any instrument.

Mobile phase tasks are listed under Mobile Phase and then under the instrument name given to the pump.

All other tasks are listed alphanumerically under the instrument name.

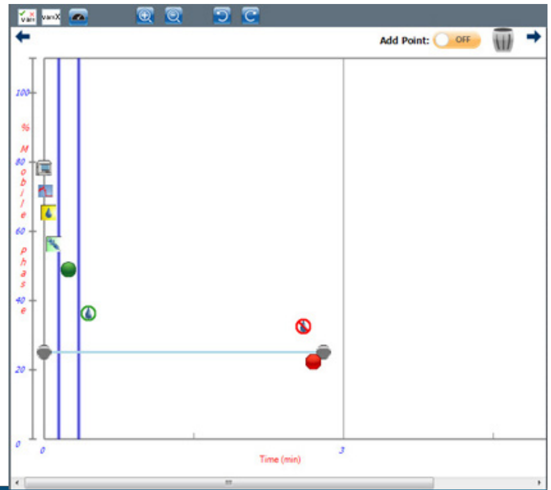
For descriptions of Gilson-supplied tasks, refer to List of Tasks on page 232.

Workspace Tab

The **Workspace** tab shows timed events and mobile phase concentration information and includes:

- Workspace
- List View

WORKSPACE

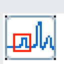


The workspace is an area that shows a graphic representation of timed events and mobile phase concentration information.

For information on how to create a method, refer to How to Create a Method on page 43.

Toolbar

Select an icon to perform the action described below.

ICON	LABEL	DESCRIPTION
	Variable	Opens the advanced **Variable Properties** dialog. For more information about variables, refer to **Working with Variables on page 218**.
	Set Sample Variable	Identifies the zone specified in the injection task so that the software knows where samples for re-injection are located.
	Flow Rate	Sets the flow rate.
	Zoom In	Makes the viewable time scale shorter.
	Zoom Out	Makes the viewable time scale longer.
	Undo	Reverses the last action when the last action was to add or delete a task, modify the task time graphically, or modify a gradient point graphically.
	Redo	Repeats the last action prior to an undo.
 	Add Point	Add Point is a toggle option. When toggled on, allows for adding points to the gradient.
	Trash Bin	When an item in the workspace, such as a point on a gradient or a task in the workspace, is dragged from the control workspace to the trash bin, it is removed from the workspace.
	Update Chromatogram	After selecting a chromatogram from a previous run to overlay the method control and after any fraction collection conditions have been modified, click to update the overlay with the fraction collection start and stop lines. For more information, refer to **How to Simulate Fraction Collection by Slope or Level on page 100**.

WORKSPACE TOOLBAR CONTINUED ON PAGE 90

ICON	LABEL	DESCRIPTION
	Application Run Results	Displays the **Application Run Results** dialog. Select a chromatogram from a previous run to overlay the method control.
	Results List	Displays the **Results List** window that provides previews of overlaid results for all channels and allows for changing the color of the data trace of each overlaid result, toggling to hide or show overlaid results, or removing overlaid results. For more information, refer to **How to Modify the Appearance of Overlaid Results in the Method Builder on page 101**.
	List View Print	Prints the control tasks displayed in the **List View**.
	Hide List View	Hides the **List View**.
	Show List View	Shows the **List View**.
	Left	Scrolls the X-axis to the left.
	Right	Scrolls the X-axis to the right.
	Help	Displays the on-line help information.

RIGHT-CLICK MENU

Task

Right-click on a task icon in the Method Builder - Control to display the following menu options:

MENU	DESCRIPTION
Delete	Deletes the task from the method control.
Open	Opens the task in the Task Builder.
Property	Allows you to change the time of the task or the values for the properties.

Grid

Right-click on the grid in the Method Builder - Control to display the following menu options:

MENU	DESCRIPTION
Color: Back	Allows you to change the color of the background of the grid.
Color: Front	Allows you to change the color of the vertical lines on the grid.
Grid	Toggles hide or show the vertical lines on the grid.

Gradient

Right-click on a gradient in the Method Builder - Control to display the following menu options:

MENU	DESCRIPTION
Property	Allows you to change flow rate, time, and percent composition of the gradient.
Delete	Deletes the gradient from the method control.

List View

The list view displays and describes control tasks using text and minimal graphics.

RIGHT-CLICK MENU

Right-click on a task icon to display the following menu options:

MENU	DESCRIPTION
Delete	Deletes the task from the method control.
Open	Opens the task in the .
Property	Allows you to change the time of the task or the values for the properties.
Expand All/Collapse All	Expands the view to display all properties and values or collapses the view.

Error Handling Tab

TRILUTION LC can automatically respond to the occurrence of defined errors during a run. Set up methods and designate them to tell the software what to do if it encounters a defined error.

There are four possible user-defined responses for when a defined error occurs during a run:

- An error method is specified and **Resume Run** is selected.
- No error method is specified and **Resume Run** is selected.
- An error method is specified and **Resume Run** is not selected.
- No error method is specified and **Resume Run** is not selected.

A notification is displayed to indicate than an error has been encountered. For more information, refer to Notification on page 21.

How to Set Up Instrument Error Handling

1. In the **Method Builder**, first create a configuration, bed layout, and control (refer to How to Create a Method on page 43), and then select the **Error Handling** tab.
2. Select the instrument to monitor from the drop-down list of instruments in the configuration.

> **NOTE**
>
> **To monitor pressure when using a 331/332 or 333/334 Prep-Scale HPLC Pump combination, select only the 331 or 333.**
>
> **Pressure for a make up pump should never exceed 1000 psi, which is the maximum pressure rating for the splitter. When using a make up pump, set up pressure error handling that will run an error method if the pressure is too high. The error method should include the task to stop the make up pump.**

3. Optionally, select an error method to run when this error is encountered. Only methods specified during the save as **Use for Error Handling** will be available.
4. Select the parameter from the drop-down list of possible parameters for the instrument selected.
5. Select a valid mathematical operator (all are listed, but some would not make sense).
6. Type the value to monitor in the field to the right of the mathematical operator.
7. Optionally, select the **Resume Run** check box.

8. Click **New**.
9. Repeat all steps for additional instruments or set up additional parameters for the same instrument. Refer to the table **Error Responses on page 93** that describes all possible responses post error.

Parameter Descriptions

PARAMETER	DESCRIPTION
Analytical Chamber Pressure	This error results when the vacuum pressure in the analytical chamber exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used.
APCI Vaporizer Temperature	This error results when the APCI vaporizer temperature exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used.
Bed Location Error	This error results when a zone or well referenced in a task or sample list does not exist in the bed layout.
Bubble Sensor	This error results when an air bubble is detected by the bubble sensor. The valid mathematical operator is == and the valid value is Occurred.
Capillary Heater Temperature	This error results when the current temperature is not within 10% of the temperature set in the VERITY 1920 MS Detector Start Up task. The valid mathematical operator is == and the valid value is OCCURRED. This error handling parameter should not be used in a method that uses the **VERITY 1920 MS Detector Start Up** task, as equilibration time is necessary for any temperature change to take effect.
Chamber Pressure	This error results if the chamber pressure is <1 x 10-5 (0.00001) Torr. The valid mathematical operator is == and the valid value is Occurred.
Check Tune Area Failure	Not used.
Check Tune Mass Failure	Not used.
Dry Gas Flow	This error results when the dry gas flow exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used.
Dry Gas Temperature	This error results when the dry gas temperature exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used.
Instrument Error	This error results when any scheduled command fails to execute or if the software loses communication with an instrument. For Mobile Phase pumps, the error will only result if the software loses communication with the pump.
Ion Guide Chamber Pressure	This error results when the vacuum pressure in the ion guide chamber exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used.
Ion Source Gas Flow	This error occurs if the ion source gas flow is insufficient. The valid mathematical operator is == and the valid value is Occurred.
Ion Source Gas Heater Temperature	This error results when the current temperature is not within 10% of the temperature set in the VERITY 1920 MS Detector Start Up task. The valid mathematical operator is == and the valid value is OCCURRED. This error handling parameter should not be used in a method that uses the **VERITY 1920 MS Detector Start Up** task, as equilibration time is necessary for any temperature change to take effect.
Leak Detection Error	This error results when the leak sensor on the VERITY 1741 Detector senses a leak. The valid mathematical operator is == and the valid value is OCCURRED.
Make Up Pump Pressure	This error results when the make up pump pressure exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used. Note that the pump does not stop when a pressure error occurs. It is recommended to specify an error method that stops the pump.
Nebulizer Gas Flow	This error occurs if the nebulizer gas flow is insufficient. The valid mathematical operator is == and the valid value is Occurred.
Nebulizer Gas Pressure	This error results when the nebulizer gas pressure exceeds or is equal to or is lower than the value set on this screen, depending on the mathematical operator used.
Nitrogen Gas Pressure	This error results when Nitrogen Gas is not available to the MS Detector. The valid mathematical operator is == and the valid value is 0.

PARAMETER DESCRIPTIONS CONTINUED ON PAGE 93

PARAMETER	DESCRIPTION
Not Pumped Down	This error results when the MS Detector is not pumped down. The valid mathematical operator is == and the valid value is TRUE.
No Fraction Sites	This error results when no fraction wells are available or when not enough wells are available based on the minimum fraction sites criteria set in the sample list.
No Fractions Collected	This error results when no fractions are collected for a sample. This only applies if the method contains tasks to establish fraction collection parameters.
Solvent Level Sensor	This error results when a contact state change is triggered by the solvent level sensor. The valid mathematical operator is == and the valid value is Occurred.
Standby	This error results when the MS Detector goes into standby. The valid mathematical operator is == and the valid value is TRUE.
Vented	This error results when the MS Detector is vented (not pumped down). The valid mathematical operator is == and the valid value is TRUE.
Wait Time	This error results when an input contact does not occur within the length of time set on this screen. If the wait time is set to zero (0), the system waits indefinitely for the input contact. The valid mathematical operator is greater than or equal to.
Contact Error	This error results when a contact is in a specified state. The valid mathematical operator is == and the valid values are TRUE or FALSE where TRUE=CLOSE and FALSE=OPEN.

Error Responses

The following table describes all responses post error for all errors except Pressure. For Pressure error responses, refer to Pressure Error Responses on page 94.

ERROR METHOD SPECIFIED?	RESUME RUN?	RESPONSE
Yes	Yes	• Error Method Execution notification appears* • Control method terminates • Error method executes • Run resumes starting with the next step in the sample list • Run Complete notification appears (with errors, refer to log for details)*
No	Yes	• Error Method Execution notification appears* • Run resumes starting with the next step in the sample list • Run Complete notification appears (with errors, refer to log for details)*
Yes	No	• Error Method Execution notification appears* • Control method terminates • Error method executes • Application run terminates • Run Complete notification appears (with errors, refer to log for details)*
No	No	• Error Method Execution notification appears* • Application run terminates • Run Complete notification appears (with errors, refer to log for details)*

*Notification only appears if specified.

PRESSURE ERROR RESPONSES

High Pressure Error

The mathematical operators greater than (>) and greater than or equal to can be used to set a high pressure error. The high pressure error results when the system pressure exceeds or is equal to the value set on this screen.

For the VERITY 3011 Pump, the pump will stop automatically if a high pressure error occurs.

High Pressure Error Responses (Mobile Phase Pumps)

ERROR METHOD SPECIFIED?	RESUME RUN?	RESPONSE
Yes	Yes	• Pumps stop • Control method terminates • Error method executes • Error Method Execution notification appears* • Application run resumes starting with the next sample in the sample list • Run Complete notification appears (with errors, refer to log for details)*
No	Yes	• Pumps stop • Error Method Execution notification appears* • Application run resumes starting with the next sample in the sample list • Run Complete notification appears (with errors, refer to log for details)*
Yes	No	• Pumps stop • Control method terminates • Error method executes • Error Method Execution notification appears* • Run Complete notification appears (with errors, refer to log for details)*
No	No	• Pumps stop • Error Method Execution notification appears* • Run terminates • Run Complete notification appears (with errors, refer to log for details)*

Low Pressure Error

The mathematical operators less than (<) and less than or equal to can be used to set a low pressure error. The low pressure error results when the system pressure is equal to or is lower than the value set on this screen.

For the VERITY 3011 Pump, the pump will stop automatically if a low pressure error occurs.

Low Pressure Error Responses (Mobile Phase Pumps)

NOTE

After starting a method, TRILUTION LC will first ensure that the pressure is stabilized by waiting for up to 30 seconds for the pressure to be above the low pressure value selected in error handling. Waiting for this period of time gives the pump the opportunity to get up to pressure when first starting pumping, for example during a startup method. If the pressure does not exceed the low pressure value after 30 seconds, the error handling condition will be triggered. Once the pressure has exceeded the low pressure value, TRILUTION LC begins monitoring for low pressure errors.

Low pressure error responses occur 3–5 seconds after detection and only if the pressure remains below the set point.

Low pressure error responses are the same for all mobile phase pumps in TRILUTION LC..

ERROR METHOD SPECIFIED?	RESUME RUN?	RESPONSE
Yes	Yes	• Pumps stop • Control method terminates • Error method executes • Error Method Execution notification appears* • Application run resumes starting with the next sample in the sample list • Run Complete notification appears (with errors, refer to log for details)*
No	Yes	• Pumps stop • Error Method Execution notification appears* • Application run resumes starting with the next sample in the sample list • Run Complete notification appears (with errors, refer to log for details)*
Yes	No	• Pumps stop • Control method terminates • Error method executes • Error Method Execution notification appears* • Run Complete notification appears (with errors, refer to log for details)*
No	No	• Pumps stop • Error Method Execution notification appears* • Run terminates • Run Complete notification appears (with errors, refer to log for details)*

*Notification only appears if specified.

Pressure Error - Make Up Pump

Refer to the table below that describes all possible responses post-error for the make up pump. Note that the pumps do not stop when a pressure error occurs. It is recommended to specify an error method that stops the pumps.

Pressure Error Responses (Make Up Pump)

ERROR HANDLING METHOD SPECIFIED?	RESUME RUN?	RESPONSE
Yes	Yes	• Control method terminates • Error method executes • Error Method Execution notification appears* • Application run resumes starting with the next sample in the sample list • Run Complete notification appears (with errors, refer to log for details)*
No	Yes	• Error Method Execution notification* • Application run resumes starting with the next sample in the sample list • Run Complete notification appears (with errors, refer to log for details)*
Yes	No	• Control method terminates • Error method executes • Error Method Execution notification appears* • Run Complete notification appears (with errors, refer to log for details)*
No	No	• Error Method Execution notification appears* • Run terminates • Run Complete notification appears (with errors, refer to log for details)*

*Notification only appears if specified.

Modify Instrument Error Handling

Modify instrument error handling by doing any of the following:

- Setting up error handling for additional instruments in the configuration.
- Setting up error handling with additional criteria for the same instrument.
- Deleting instruments and/or parameters from the monitored list of criteria. Right-click on a row in the table of monitored criteria and then select **Delete** to delete the criteria.
- Modifying the instruments and/or parameters in the monitored list of criteria. Select the row, make the desired changes, and then select **Modify**.

Delete Instrument Error Handling Conditions

To delete error handling conditions set for an instrument:

1. Select the rows in the table.
2. Right-click, and then select **Delete**.

Schedule Timed Tasks

Each command issued in the method control is referred to as task. You can specify tasks that set the gradient profile, start or stop fraction collection, start or stop data collection, control the injector, or send or wait for a contact signal.

To add a task to the method, drag, and then drop the task into the workspace.

Within the properties box, there is a **Time** box for indicating the time point at which to start the task. This tells the software when to perform that function. To change the time or properties after it has been added to the workspace, double-click the task icon in the workspace.

When placing multiple tasks for one instrument, allow enough time for the instrument to perform one task before issuing another task. Separate the tasks by a minimum of 0.1 min.

For information about using variables for task properties, refer to Working with Variables on page 218.

Modify Task Time and/or Properties

To change task time or properties, do either of the following:

- Double-click the task icon.
- Right-click the task icon and then select **Property**.

Modify Task

To modify the Task:

1. Right-click the Task.
2. Select **Open**. The Task will open in the Task Builder.

NOTE Gilson-supplied tasks cannot be saved using the supplied name.

Delete Task from Control

To remove a task from the control, select the task, and then do any of the following:

- Right-click and then select **Delete**.
- Press the **DELETE** key.
- Drag the task to the trash bin ()

How to Create Gradient or Isocratic Conditions

An Isocratic and several linear gradient (Linear Gradient with Column Wash Out, Linear Gradient with No Column Wash Out, Multi Linear Gradient with Step and Column Wash Out, and Multi Linear Gradient with Column Wash Out) mobile phase templates are available as tasks in the Method Builder. Add a template to the method control and then, optionally, modify it by doing any of the following: Add a Point to the Mobile Phase Template, Modify Points on the Mobile Phase Template, or Delete Points on the Mobile Phase Template.

Adding a different template to the method removes the existing template from the method. (Only one mobile phase template is allowed per method.) Templates default to 10 minutes.

NOTE Unlike other tasks, gradient tasks cannot be opened in the Task Builder.

Add a Point to the Mobile Phase Template

To add a point to an existing template in the workspace:

1. Drag the **Gradient** task and then drop it in the workspace at the desired time and composition.
2. Optionally, edit the properties by doing either of the following:
    - Verify that the point is selected (green) and then drag the point to the desired time and composition, which is displayed above the workspace as the point is moved.
    - Double-click the point, enter new values in the **Gradient Properties** dialog, and then select **OK**.

    Or

    Click to switch the **Add Point** toggle button from OFF (

) to ON (

)
3. Click anywhere in the workspace to add a point to the gradient at the desired time and composition. The **Add Point** toggle button switches back to OFF.
4. Optionally, edit the properties by doing either of the following:
    - Verify that the point is selected (green) and then drag the point to the desired time and composition, which is displayed above the workspace as the point is moved.
    - Double-click the point, enter new values in the **Gradient Properties** dialog, and then click **OK**.

Modify Points on the Mobile Phase Template

To modify points, change the time, percent composition, or flow rate for the pumps.

Modify the Time

SINGLE POINT

To modify the time of a single point, do either of the following:

- Click to select one point. (It changes to green.) Drag the point to the desired time. The composition and time for the selected point being moved is displayed dynamically above the workspace.
- Double-click on a point, enter the time, and then select **OK**.

GRADIENT GROUP

To modify the time of a gradient group, click to select the first point and last point in the group (points and connecting lines change to green). Drag the group of points to the desired time. The composition and time for each selected point being moved is displayed dynamically above the workspace.

Modify the Percent Composition

SINGLE POINT

To modify the percent composition for a single point, do either of the following:

- Click to select one point. (It changes to green.) Drag the point to the desired composition for the organic pump. The composition and time for the selected point is displayed dynamically above the workspace.
- Double-click on a point, enter the percent composition, and then select **OK**.

GRADIENT GROUP

To modify the percent composition for a gradient group, click to select the first point and last point in the group (points and connecting lines change to green). Drag the group of points to the desired composition for the organic pump. The composition and time for each selected point is displayed dynamically above the workspace.

Modify the Flow Rate

SINGLE POINT

To modify the flow rate for a single point, double-click on a point, enter the new flow rate, and then click **OK**.

ALL POINTS

To modify the flow rate for all gradient points in the method:

1. Click the set flow rate button ( ).
2. Enter the new flow rate.
3. Click **OK**.

Delete Points on the Mobile Phase Template

SINGLE POINT

To delete a single point:

1. Click to select one point. (It changes to green.)
2. Do any of the following:
   - Drag the point to the trash bin ( ) at the top of the window.
   - Right-click, and then select **Delete**.
   - Press the **DELETE** key.

   The software automatically connects remaining points.

GRADIENT GROUP

To delete a gradient group:

1. Click to select the first point and last point in the group (points and connecting lines change to green).
2. Do either of the following:
   - Drag the group of points to the trash bin ( ) at the top of the window.
   - Press the **DELETE** key.

   The software automatically connects remaining points.

How to Simulate Fraction Collection by Slope or Level

Optimize fraction collection settings using the fraction collection simulator:

1. Create a method that includes fraction collection by slope or level. For more information, refer to How to Create a Method on page 43.
2. Browse in a representative example chromatogram from a previous run's results.
   a. Click the **Application Run Results** tool ( ).
   b. From the drop-down menu, select the application that was run to obtain the results that will be overlaid and the channel for which to overlay the results.
   c. Double-click the **Run Name/Method/Channel**. The **Select Iteration** dialog appears.
   d. On the **Select Iteration** dialog, do either of the following:
      1. Double-click the iteration number.
      2. Click to select the iteration number and then click **OK**.

   The chromatogram overlays in the method control beginning at the **Start Data Collection** task. Optionally, modify the color or remove the chromatogram trace. For more information, refer to How to Modify the Appearance of Overlaid Results in the Method Builder.

   If using the **Conditional Fraction Collection** task with more than one data channel, complete steps a–d for each channel.

   The fraction start and fraction end lines overlay the chromatogram showing the current fraction collection settings in effect.

   If variables were used for any of the fraction collection parameters, modify the default Value for the variable in the **Variable Properties** dialog. If the Value is not modified, 0 (the default Value) will be used in the simulation. For more information about creating variables, refer to How to Create a New Variable on page 218.
3. Optionally, modify the fraction collection parameters.
4. Click the **Update Chromatogram** tool ( ). The fraction start and fraction end lines update based on the modifications to the fraction collection parameters.

How to Modify the Appearance of Overlaid Results in the Method Builder

Select  to open the **Results List** dialog.

The **Results List** dialog in the **Method Builder** provides previews of overlaid results for all channels and allows for changing the color of the data trace of each overlaid result or removing overlaid results.

To change the color of a trace, select the check box next to the preview of the trace and then select **Color**. Select a color from the color palette.

To remove overlaid results, select the check box next to the preview of the trace, select **Remove**, and then select **OK**.

METHOD BUILDER - ANALYSIS

Using the options on the **Analysis tab** in the **Method Builder**, indicate how collected data are analyzed and reported. An analysis sets conditions for analyzing peaks in collected data. Creating an analysis includes setting peak parameters, naming peaks, and specifying parameters for generating reports.

To create an analysis, refer to How to Create an Analysis on page 125.

Analysis Tab Window

The **Analysis tab** window in the **Method Builder** is a graphical interface used to organize the analysis tasks used in a method.

The Analysis tab window includes:

- Peak Integration Tab on page 102
- Report Tab on page 113
- Error Handling Tab

Peak Integration Tab

The **Peak Integration** tab in the Analysis window provides for setting analysis conditions and includes:

- Integration Tasks
- Peak Table
- Background Removal
- Void Volume Retention Time
- Custom Calculation
- Calibration
- DAD Peak Purity
- Spectral Library
- Workspace
- List View

Integration Tasks

When you first open an **Analysis window** (**Peak Integration** tab), the following integration events are set at 0.00 minutes:

- Default Baseline
- Inhibit Negative Peak Integration
- Analysis Settings

For most separations, these are the only events to set; however, you can delete or modify these events, if necessary.

NOTE

Integration always begins at analysis time 0. Analysis time 0 begins at the start of data collection in the control. If integration tasks are deleted or moved away from time 0, the default parameters for the integration tasks will be used at time 0 until the first integration task. The default baseline is Default Baseline. Negative Peak integration is inhibited. The default Front and Back Slopes are 25, the default Peak Width is 0.20 min, and the default Peak Filter is 0.00 min.

Removing the Inhibit Negative Peak Integration event does not turn on negative peak integration. Insert an Enable Negative Peak Integration event at the time point at which to start negative peak integration.

To be integrated, a peak must elute during data collection. Furthermore, every contour rising from and falling to the baseline must meet the peak detection criteria. 600 peaks per run can be integrated.

The software's ability to integrate peaks depends on the Analysis Settings. These settings give information to the software about the size and shape of your peaks and the noise level riding the baseline. However, if one or more peaks of interest are not integrated, modify some or all of these parameters before subsequent runs or re-analysis processing.

The following table shows the icons representing integration events.

TOOL	ICON		DESCRIPTION
Baseline	Default Baseline		Default Baseline
Baseline	Horizontal Baseline		Horizontal Baseline
Baseline	All Valleys Baseline		All Valleys
Baseline	Tangent Skim Baseline		Tangent Skim
Baseline	Next Valley Baseline		Next Valley
Integration	Inhibit Integration	Enable Integration	Inhibit/Enable Integration
Negative Peak	Inhibit Negative Peak Integration	Enable Negative Peak Integration	Negative Peak
Analysis Settings	Analysis Settings		Analysis Settings

Fraction Collection	Start Integration by Fraction Collection	Stop Integration by Fraction Collection	Start/Stop Integration by Fraction Collection

Peak Table

The peak table is where you tell the software about the peaks in data analyzed by the analysis. If you name peaks in the peak table, your reports refer directly to those peaks when reporting areas, heights, amounts, and so on.

The peak table has options for specifying:

- Retention Time
- Name
- Reference Peak (Optional)
- Group
- IntStd (Internal Standard)
- Color
- Absolute Error and Relative Error

RIGHT-CLICK OPTIONS

Right-click on a row to display the following menu options:

MENU	DESCRIPTION
Add	Inserts additional rows in the table for adding more peaks.
Delete	Deletes the information for a peak by deleting the row in the table.
Group	Creates peak groupings. For more information, refer to Group.

RETENTION TIME

Retention time is the retention time for the peak, defined by the APEX of the peak. The limit of resolution is hundredths of a minute (0.01 min).

Peak retention time is based on start of data collection indicated in the control executed at the same time as the analysis. If the beginning of data collection and injection are not synchronous, retention times reported deviate from actual retention times by their difference.

For more information, refer to **How to Define Retention Time Windows on page 131**.

NAME

Name peaks and indicate their retention times in the peak table. Retention time information is obtained by injecting and acquiring traces for test samples.

Identify each peak for the component it represents.

NOTE	**Reports are limited to displaying 20 characters for the peak name.**

REFERENCE PEAK (OPTIONAL)

The software uses reference peaks to correct for retention time shifts that can occur during runs that analyze multiple samples. When the software notices a difference between the expected and actual retention time of a reference peak, it adjusts the retention times of the preceding non-reference peaks in its internal peak table.

You can designate an unlimited number of reference peaks in both calibration and unknown samples. An ideal reference peak is a large isolated peak with a consistent retention time. You can designate several reference peaks with retention times at the beginning, middle, and end of the run. If you designate just one reference peak, it should be a late-eluting peak.

GROUP

When you right-click on a row in the peak table and then select **Group**, options for grouping peaks appear in the **Peak Group** dialog. TRILUTION LC reports total area for all peaks selected in addition to the area of each individual peak.

Set Up Group Names

To indicate group names:

1. In the **Peak Group** dialog, type a name in the **Group** field.
2. Select **Insert**. The group name is added to the list.
3. Select the group name from the list.
4. Select **Group**.

Group Peaks

1. Select the row in the **Peak Table**.
2. Right-click and then select **Group**.
3. Select the group name from the list.
4. Click **Group**.
5. Repeat steps 1 through 4 to assign other peaks to groups.
6. To remove a peak from a group, choose its name in the list and click **Ungroup**.

Delete Group Names

To delete group names:

1. Right-click the group name.
2. Select **Delete**.

INTSTD (INTERNAL STANDARD)

When the **IntStd** check box is selected, it indicates that the peak is an internal standard. Enter the time frame during which to use the standard.

Start Time

Start Time is the time at which to begin using the internal standard.

End Time

End Time is the time at which to stop using the internal standard. It must be later than the Start Time.

After typing the **Start** and **End** times, click **Set** to accept the values entered, click **Clear** to reset the values to 0 and clear the **IntStd** check box and close the dialog, or click **Close** to close the dialog without saving.

COLOR

Click to select from available color fills for the peak. The default is no fill.

ABSOLUTE ERROR AND RELATIVE ERROR

These are the retention time window parameters. To compensate for possible retention time drift, the software defines a window around the retention time for each peak. If a peak elutes at any time during that window, the software identifies it.

Absolute Error

Absolute error is a constant amount of time on either side of a peak's nominal retention time. The software automatically searches for eluted peaks at every named retention time plus or minus this amount of time.

Relative Error

Relative error is a percentage of peak retention time. Relative error, and, therefore, the width of retention time windows, increases with increasing retention time. Because late-eluting peaks are often broader than early peaks, the software uses this correction factor to improve the likelihood of locating late-eluting peaks.

The software uses the following formulas to calculate the beginning and end of any peak's time window. Each peak's time window appears in the graph pane.

Beginning: Ret. Time - [Abs. Error + (Ret. Time x Rel. Error)]

End: Ret. Time + (Abs. Error + Ret. Time x Rel. Error)

Background Removal

When you select the **Background Removal** check box and you set the **Sample Type** in the **Sample List** as **BLANK**, you indicate that its data will be subtracted from sample data.

Clearing the **Background Removal** check box indicates that you do not want the software to perform background subtraction.

For more information about sample types, refer to Sample Type on page 142.

Void Volume Retention Time

This is the retention time of unretained effluent. This value is used to calculate Capacity (k').

Custom Calculation

Click **Custom Calculation** on the **Peak Integration** tab to access the **Custom Calculation Builder** for creating a formula that the software will use to generate a value that can appear in a column in the table in the report. Specify a name for this expression and then optionally add it to the column contents for the report in any method. For more information, refer to Report Column Format - Custom Calculation on page 120.

The **Custom Calculation Builder** lists quantities and mathematical operators that can be used in a formula. The following table provides a description of each calculable quantity.

CALCULABLE QUANTITY	DESCRIPTION
Amount	Returns the peak amount
AMOUNT_%	Returns the peak's amount as a percentage of the total amount calculated for all named peaks in the sample
Area	Returns the peak area
Area %	Returns the peak's area as a percentage of the total area of all integrated peaks in the sample
ASYMMETRY	Returns the peak's asymmetry, a value that identifies the shape of the peak, at 10% of peak height
BACK_RESOLUTION	Returns the resolution of a peak in relation to the next peak
BACK_SLOPE	Returns the slope at half height of the peak's descending edge
CAPACITY	Returns the capacity factor (k'), which measures the degree of retention
END_TIME	Returns the time point, in seconds, at which integration stopped for the peak
END_VALUE	Returns the returns the height at which integration stopped for the peak
FRONT_RESOLUTION	Returns the resolution of the peak in relation to the previous peak
FRONT_SLOPE	Returns the slope at half height of the peak's ascending edge
Height	Returns the distance from the baseline to the maximum of the peak
HEIGHT_%	Returns a peak's height as a percentage of the total height of all integrated peaks in the sample
INJ_NUMBER	Returns the number of the injection that corresponds to the peak
%_CONC	Returns the peak's percent concentration (as related to the total sample amount) of each reported peak
PLATE_NUMBER	Returns the plate number, a value that indicates column efficiency
PURITY	Returns the peak purity
RETENTION_TIME	Returns the elapsed time, in seconds, between the point of injection and maximum of the peak
START_TIME	Returns the time point, in seconds, at which integration began for the peak
START_VALUE	Returns the height at which integration began for the peak
TAILING_FACTOR	Returns the tailing factor at 5% of height.
WIDTH	Returns the peak width, in seconds, at half height

Calibration

Select the **Calibration** check box to tell the software that you will be running a calibration.

To tell the software how to construct the calibration curve and display the **Calculation** dialog, select Calibration.

When analyzing a sample, the software determines the peak area (or height) for each named component. For each peak, the software generates a calibration curve to determine the amount of that component in each unknown sample.

A component's calibration curve plots the average peak area (or height) versus the amount injected.

For more information about calibrations, refer to **Calibrations on page 215**.

TYPE

Area
Generates the curve based on the area of each standard peak.

Height
Generates the curve based on the height of each standard peak.

External Calibration

Generates the curve based on a previous calibration run. When this type is selected, the **Browse External** button becomes active to load an external calibration.

Internal Standard

Indicates that an internal standard will be used. Select whether to quantify the standard peaks by area or height when generating the curve.

Curve Fit

Cubic

The software generates a smooth curve that best represents the set of means. The curve may have two bends.

To determine the amount of that component in an unknown sample, the software determines where that component's peak area intersects the calibration curve.

Linear

Using a best-fit method, the software constructs a line that best represents the set of means. This method minimizes the sum of the squares of the error distance between each mean and the line.

Linear through Zero

Using a best-fit method, the software constructs a line that best represents the set of means and includes the origin (0 area, 0 height) as a point.

Point to Point

The software connects the mean amount for each standard using a linear segment. For a single-standard calibration plot, the software generates a linear segment between the origin (0 area or 0 height, 0 amount) and mean peak area at the amount.

Quadratic

The software generates a smooth curve that best represents the set of means. The curve may have one bend.

Peak Height Threshold (%)

Specifies the percentage above the baseline at which spectra for the peak will be extracted. The selection of spectra is based on the peak height threshold and the number of sampled spectra.

Purity Threshold

If TRILUTION LC calculates a peak purity that is below this value, the peak is color filled red on the **Peak Purity Display** graph. If the calculated peak purity is above this value, the peak is color filled green on the **Peak Purity Display** graph. For more information about the **Peak Purity Display** graph, refer to Peak Purity Tab on page 191

Workspace

Shows a graphic representation of timed tasks and peak retention time windows. Displays the analysis name.

Toolbar

Select an icon to perform the action described below:

TOOL	LABEL	DESCRIPTION
	Zoom In	Makes the viewable time scale shorter.
	Zoom Out	Makes the viewable time scale longer.
	Undo	Reverses the last action when the last action was to add or delete a task or modify the task time graphically.
	Redo	Repeats the last action prior to an undo.
	Trash Bin	When an item in the workspace is dragged to the trash bin, it is removed from the workspace.
	Left arrow	Scrolls the X-axis to the left.
	Right arrow	Scrolls the X-axis to the right.
	Update Chromatogram	After making changes to the Peak Table, select the **Update Chromatogram** icon and the changes are reflected in the graph. To remove the peak windows from the graph, right-click on the graph and then select **Delete Peak Window**.
	Application Run Results	To overlay results from a previous run, click the Application Run Results tool. This displays the **Application Run Results** dialog in which you can select the results from a previous run.
	List View Print	Prints the analysis tasks displayed in the **List View**.
	Hide List View	Hides the **List View**.
	Show List View	Shows the **List View**.
	Help	Displays the on-line help information.

Right-click Menu

Task

Right-click on a task icon to display the following menu options:

MENU	DESCRIPTION
Delete	Deletes the task from the analysis.
Property	Allows for changing the time of the task or the values for the properties.

Grid

Right-click on the grid to display the following menu options:

MENU	DESCRIPTION
Color: Back	Allows for changing the color of the background of the grid.
Color: Front	Allows for changing the color of the vertical lines on the grid.

Grid	Toggles hide or show the vertical lines on the grid.

List View

Displays and describes analysis tasks using text and minimal graphics.

Right-click Menu

Right-click on a task icon to display the following menu options:

MENU	DESCRIPTION
Delete	Deletes the task from the analysis.
Property	Allows for changing the time of the task or the values for the properties.
Expand All	Expands the view to display all properties and values.
Collapse All	Collapses the view to display tasks only.

DAD Peak Purity

Peak Purity is a spectral comparison of the apex spectrum to spectra from across the peak. This comparison is used to check the purity of the peak. The spectra that are compared depend on the **Number of Sampled Spectra** selected.

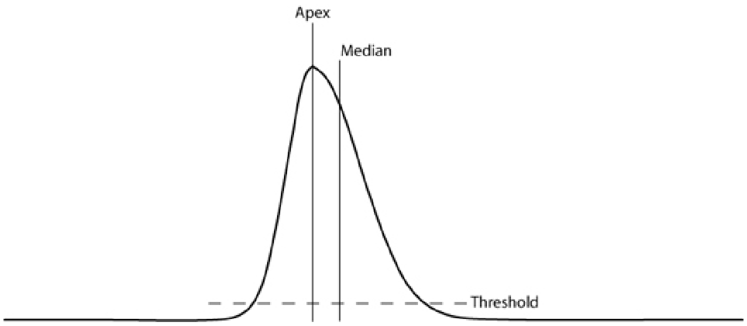
To set peak purity options, select DAD Peak Purity.

Number of Sampled Spectra

Identifies the number of spectra to be evaluated and used in the peak purity algorithm for each integrated peak. Select **1**, **3**, **5**, **7**, **9**, or **All**. TRILUTION LC selects spectra between the peak's apex and peak height threshold. For more information, refer to the following diagrams:

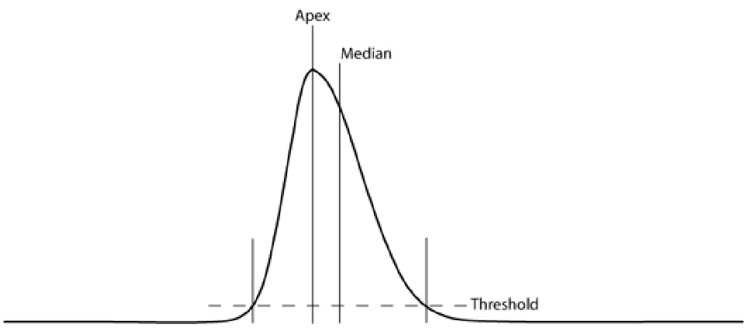
Number of Sampled Spectra = 1

The apex spectrum is compared with the spectrum at the median.



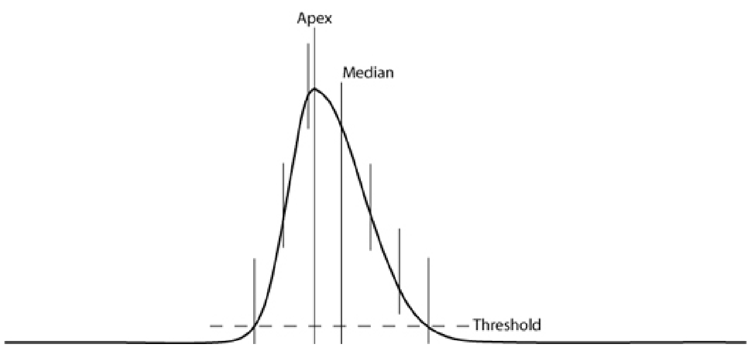
Number of Sampled Spectra = 3

The apex spectrum is compared with spectra at the median and the two peak threshold intersections.



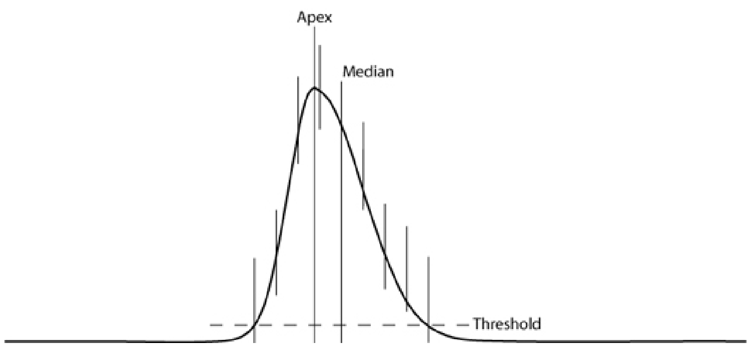
Number of Sampled Spectra = 7

The apex spectrum is compared with equally spaced spectra between the median and the threshold intersections.



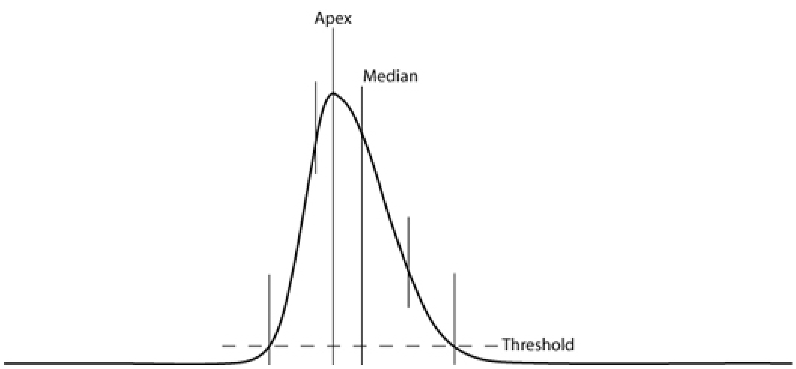
Number of Sampled Spectra = 9

The apex spectrum is compared with equally spaced spectra between the median and the threshold intersections.



Number of Sampled Spectra = 5

The apex spectrum is compared with spectra at the median, the threshold intersections, and the mid-points between the median and threshold intersections.



Number of Sampled Spectra = All

The apex spectrum is compared with all spectra between the threshold intersections.

Wavelength Range: Minimum and Maximum (nm)

Identify the lowest and highest wavelength to use when calculating peak purity. You should limit the wavelength range to the area of absorption for your compounds of interest. TRILUTION LC's peak purity algorithm may give misleadingly high results if wavelengths outside the UV/VIS absorption range for the compounds are included. The default range is 190–350 nm. The valid range is dependent on the detector.

Spectral Library

TRILUTION LC allows for assembling reference databases of spectral peaks of known compounds for searching and matching the databases' contents to a chromatogram for an unknown sample and reporting the outcome.

To perform spectral matching at run time:

1. Select (**DAD** or **Mass**) **Spectral Library**. The **Search (DAD or Mass) Spectral Library** dialog appears.
2. In the **Search (DAD or Mass) Spectral Library** dialog:
   a. Select the check box next to the **Library Name** for each library to be searched.
   b. For each peak spectrum to match, do one of the following:
      - Select the check box next to the **Peak Name** and under **All Peaks** to search all spectral library peaks.
      - Select the check box next to the **Peak Name** and under **Time Period** and then enter **Start** and **End** times to limit the search to spectral library peaks whose retention times are within that time period.

   c. In the **Match Threshold** field, indicate the smallest match value to be reported. A match value of 1000 indicates a perfect match.
3. Select **OK**.

Report Tab

The report tab provides options for setting reporting conditions and report formats for the analysis report (refer to Analysis Report Elements on page 122), calibration report (refer to Calibration Report Elements on page 122), and summary reports.

The **Report tab** window includes:

- Report Template
- Report Column Format - Report Type
- Report Column Format - Contents
- Report Column Format - Custom Calculation
- Auto Action
- Data Channel Settings
- Peak Inclusion/Exclusion Options
- Company Logo & Address
- Analysis Report Elements
- Calibration Report Elements

REPORT TEMPLATE

Select from two different templates:

- Select **Template 1** to display one chromatogram per page.
- Select **Template 2** to display more than one chromatogram per page. Neither fraction spectra nor peak spectra will be displayed when the **Template 2** option is selected.

REPORT COLUMN FORMAT - REPORT TYPE

To view what is printed for each report, on the **Method Builder - Analysis - Report** tab, select the report type from the drop-down list.

Four report types can be modified:

Sample
This table is optionally included in the analysis report.

Sample Summary
This table is included in the unknown summary report.

Calibrator
This option is only available if the method has been specified as a calibration method. This table is optionally included in the calibration report.

Calibration Summary
This option is only available if the method has been specified as a calibration method. This table is included in the standard summary report.

REPORT COLUMN FORMAT - CONTENTS
To vary the format for reports, add or remove column contents.

To set report contents:

1. Select a **Report Type** from the drop-down list.
2. Select the information type to be added to the report from the **Contents** list.
3. Click the right arrow (◂) to add the information to **Column Contents** and to the report.
4. Click the up (▴) or down (▾) arrow to reorganize the columns. Columns listed up to down in the **Column Contents** will appear left to right in the report.

% Concentration

$$\% \text{ Concentration} = \frac{\text{Peak Amount}}{\text{Sample Amount}} \times 100$$

% Deviation
Only calculated for samples marked CONTROL.

((Nominal Amount – Unknown Amount)*100)/Nominal Amount

Amount
The actual amount entered in the sample list for a standard or the calculated amount for an unknown.

Amount %
The percentage of the peak in relation to the total amount of all named peaks.

$$\text{Amount \%} = \frac{\text{Amount for Peak}}{\sum \text{Amounts for All Named Peaks}} \times 100$$

Area
The area of the integrated peak.

Area %

$$\text{Area \%} = \frac{\text{Area for Peak}}{\sum \text{Areas of All Peaks with Areas Greater than Minimum Area in Analysis}} \times 100$$

Back Resolution

The resolution of a peak in relation to the next peak.

$$\text{Back Resolution} = 2 \times \frac{\text{Retention Time of Next Peak} - \text{Retention Time of Peak}}{\text{Baseline Width of Next Peak} + \text{Baseline Width of Peak}}$$

Back Slope

Back slope is the slope at half height of the descending edge of the peak.

Capacity (k′)

Capacity is a measurement of the degree of retention.

$$\text{Capacity} = \frac{\text{Retention Time of Peak} - \text{Retention Time of Unretained Peak}}{\text{Retention Time of Unretained Peak}}$$

Covariance

$$\text{Covariance} = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100$$

End Value

The end value is the signal at the end of the peak.

Fraction Area

The sum of the sub-fraction areas.

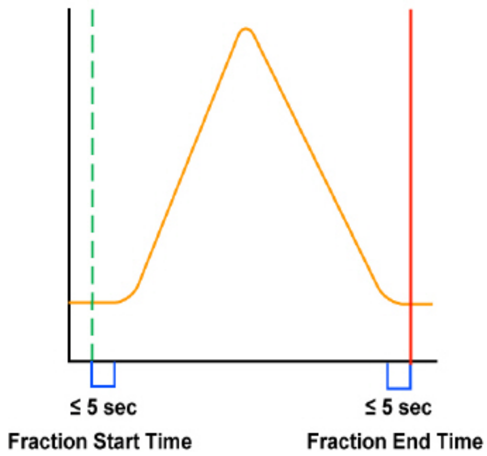
Fraction End Time

The fraction end time is the elapsed time between the point of injection and the end of a fraction that occurs within 5 seconds of the end of the peak.

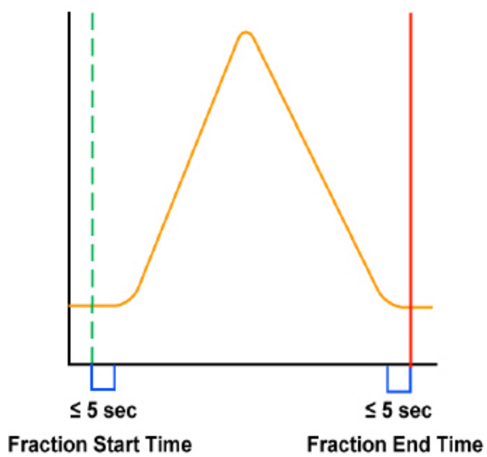
Fraction Ion(s)

The ions in each fraction of an integrated peak on the primary channel.

Fraction Site(s)
The location to which fractions for the peak are collected; reported as Zone, Well Number(s).



Fraction Start Time
The fraction start time is the elapsed time between the point of injection and the start of a fraction that occurs within five seconds of the start of the peak.



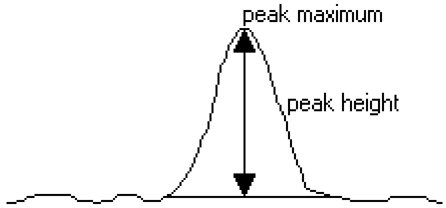
Front Resolution
Resolution of a peak in relation to the previous peak.

$$\text{Front Resolution} = 2 \times \frac{\text{Retention Time of Peak - Retention Time of Previous Peak}}{\text{Baseline Width of Peak + Baseline Width of Previous Peak}}$$

Front Slope
Slope at half height of the ascending edge of the peak.

Height

Distance from the baseline to the maximum of the peak.



Height %

$$\text{Height \%} = \frac{\text{Height for Peak}}{\sum \text{Heights of All Peaks with Heights Greater than Minimum Height in Analysis}} \times 100$$

Injection Number

The number of the injection that corresponds to the peak.

Iteration Number

The number of the step in the sample list that corresponds to the peak.

Mean Area

$$\text{Mean} = \frac{\sum x}{n}$$

where x is a measurement (area or height) and n is the number of measurements.

MS Spectral Match 1

The best mass spec spectral match according to spectral search criteria defined in the **Method Builder - Analysis**.

MS Spectral Match 2

The second best mass spec spectral match according to spectral search criteria defined in the **Method Builder - Analysis**.

MS Spectral Match 3

The third best mass spec spectral match according to spectral search criteria defined in the **Method Builder - Analysis**.

Nominal Amount

The nominal amount entered in the sample list.

Notes

The Notes entered in the sample list.

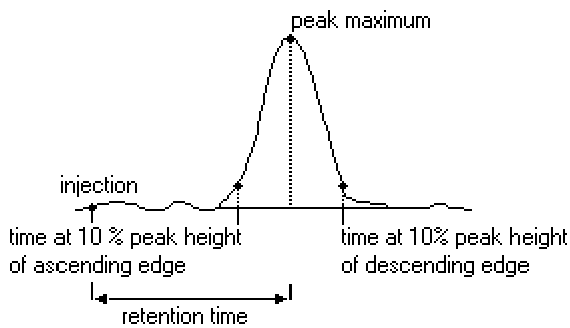
Number Average

The total number of injections.

Peak Asymmetry

Factor that identifies the shape of the peak. If this value is 1, the peak is symmetric. If the peak is skewed to the right (tailing peak), this value is greater than 1. If the peak is skewed to the left (fronting peak), this value is less than 1.

$$\text{Peak Asymmetry} = \frac{\text{Time at 10\% Peak Height of Descending Edge} - \text{Retention Time}}{\text{Retention Time} - \text{Time at 10\% Peak Height of Ascending Edge}}$$



Peak End Time

Elapsed time between the point of injection and the end of the peak.

Peak Name

Name assigned to the peak in the peak table.

Peak Start Time

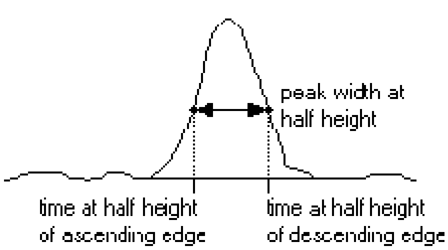
Elapsed time between the point of injection and the start of the peak.

Peak Purity

The calculated peak purity value.

Peak Width 1/2 HT

Peak Width at Half Height =
Time at Half Height of Descending Edge - Time at Half Height of Ascending Edge



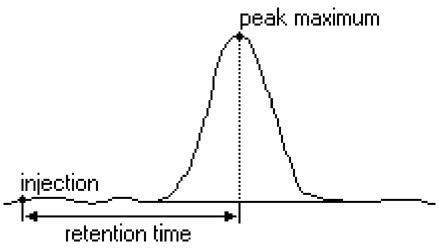
Peak Width 10%

Peak Width at 10% =
Time at 10% Height of Descending Edge - Time at 10% Height of Ascending Edge

Plate Number
This value can be used to determine column efficiency.

$$\text{Plates} = \left[\frac{\text{Retention Time}}{\text{Peak Width at Half Height}}\right]^2 \times 5.545$$

Retention Time
Elapsed time between the point of injection and the maximum of the peak.



Sample Description
The sample description assigned in the sample list.

Sample Location
The location of the original sample; reported as Zone, Well Number.

Sample Name
The sample name assigned in the sample list.

Spectral Match 1
The best spectral match according to spectral search criteria defined in the **Method Builder - Analysis**.

Spectral Match 2
The second best spectral match according to spectral search criteria defined in the **Method Builder - Analysis**.

Spectral Match 3
The third best spectral match according to spectral search criteria defined in the **Method Builder - Analysis**.

Standard Deviation
Square Root (Number of Observation * Summation(square(value)) – Square(Summation(value)) / (Number of Observations * (Number of Observations – 1)))

Start Value
The signal at the start of the peak.

Sub Fraction Area
The area of each sub fraction of a peak. When added together, the sum is the fraction area.

Tailing Factor

$$\text{Tailing Factor} = \frac{\text{Time at 5\% Peak Height of Descending Edge} - \text{Time at 5\% Peak Height of Ascending Edge}}{2 * (\text{Retention Time} - \text{Time at 5\% Peak Height of Ascending Edge})}$$

Total Fraction Ion(s)

All unique ions in fractions of an integrated peak on the primary channel.

REPORT COLUMN FORMAT - CUSTOM CALCULATION

Optionally, create a custom calculation. (For more information, refer to Custom Calculation on page 106.)

After creating custom calculation(s), optionally, use this button to add it to the column contents for the report in any method.

AUTO ACTION

Auto Print

Select this check box to print an analysis report automatically after each sample completes. If a method uses multiple data channels with multiple analyses, Auto Print is only available for the Default Analysis for each data channel.

Auto Export

Select this check box to export an analysis report automatically at the end of the run. The software names the exported file automatically. The file is named RUN NAME_METHOD NAME(INJECTION NUMBERS)DATA CHANNEL NAME_ANALYSIS NAME. The file type (and therefore file extension) is dependent on the Format specified.

Use of the auto export feature on any channel is NOT recommended when using an MS Detector.

FORMAT

Select a format from the drop-down list for the auto-exported file.

Auto MS Export

Select this check box to automatically export MS spectral data at the end of each sample. The software names the exported file automatically with the run name and date/time information.

FORMAT

Select a format from the drop-down list for the auto-exported file.

DATA CHANNEL SETTINGS

In the **Data Channel Settings** dialog, you indicate how the lines for the data channels are displayed on the chromatogram plot during the run, in the results, and in reports.

To specify data channel parameters:

1. On the **Analysis Report** tab, click **Data Channel Settings**.
2. Review the information in the areas of the dialog box and modify the information, if necessary.

% Offset

Use this parameter to move any additional channel's line away from the horizontal axis (and from other channel lines) on chromatogram plot. Express the offset as a percent of 100.

Show All Channels

This parameter, which is selected by default, specifies whether all channels or just one channel will be displayed on the chromatogram plot. Display differs depending on the area of the software: **Application Run**, **Results**, or **Reports**.

Application Run

Lines for all channels being used will be displayed during the application run.

Results and Reports

Select this check box to display a line for each channel being used that has an associated analysis.

Clear the check box to display the line for the selected channel only.

Thickness

Identifies the width of the line in pixels.

Color

Identifies the color of the line in the application run, results, and reports.

Pre-defined (not user-defined) colors will be used if data channels share an analysis.

PEAK INCLUSION/EXCLUSION OPTIONS

Include All

Select this check box and the software reports information about every peak that meets its integration requirements. Clear the check box (and set the appropriate parameters, described following) to get information only about the peaks of interest.

Unnamed Peaks

If you want the software to report information about every peak that meets its integration requirements, select this check box (and set the appropriate parameters, described following). If you only want information on peaks named in the peak table, clear this check box.

If the software integrates peaks that have not been named in the peak table, it assigns the peak a name based on the order in which it eluted. For example, the peak table named two peaks, Phenol and Benzaldehyde. However, during the run, the software detects a peak between those two peaks. The unnamed peak would be labeled "PN: 1".

Minimum Area

You can specify a minimum valid peak area to exclude insignificant peaks from reports. Unnamed peaks with area smaller than the specified value are not reported.

Maximum Area

You can specify a maximum valid peak area. Unnamed peaks with area greater than the specified value are not reported.

Minimum Height

You can specify a minimum valid peak height to exclude insignificant peaks from reports. Unnamed peaks with height smaller than the specified value are not reported.

Maximum Height

You can specify a maximum valid peak height. Unnamed peaks with height greater than the specified value are not reported.

COMPANY LOGO & ADDRESS

Allows you to add a logo and address to the upper-left corner of the Analysis Report, Method Report, Summary Report, and Calibration Report.

Add a Logo and Address

To add a logo and address to the report:

1. Select **Browse..** to browse for a logo in one of the following file formats: .JPG, .PNG, or .BMP.
2. Type a name and up to three lines in the address to appear below the logo.
3. When finished, click **OK**.

Delete a Logo

To delete a logo, select **Clear**. When finished, select **OK**.

ANALYSIS REPORT ELEMENTS

The analysis report contains the data and peak information from each injection in the sample list.

An analysis report can contain any or all of the following:

- Annotation
- Graph or Normalized Graph
- Sample Table
- Spectrum
- Run Variables
- Grouped Peaks

For more information about specifying the contents of the analysis report, refer to How to Create an Analysis Report on page 134.

After the application run completes, view the analysis report from the **Reports** window. For more information, refer to Reports on page 222.

To automatically print or export the analysis report, refer to Auto Action on page 120.

CALIBRATION REPORT ELEMENTS

A **Calibration Report** can contain any or all the following:

- Annotation
- Graph or Normalized Graph
- Sample Table
- Run Variables
- Plot
- Plot Table

Select the check box for each element to include. The check boxes for the **Plot** and **Plot Table** are found in the **Calibration Contents** dialog.

Annotation

Choose which parts of the **Calibration Report's** annotation will be viewed and printed.

1. On the **Method Builder Analysis Report** tab, select **Annotation Contents...**.
2. When the **Annotation Contents** dialog appears, use the check boxes to turn off or on parts of the annotation.

Graph or Normalized Graph

Choose whether to display a graph, a normalized graph, or both, and how peaks are labeled in the report's graphs and the run results.

1. On the **Method Builder Analysis - Report** tab, click **Graph Settings...** .
2. When the **Peak Information and Graph Settings** dialog appears, use the check boxes to turn off or on labels on the chromatograms.
3. Specify the size of the chromatogram (**Graph Size**) as a percentage of the page.
4. Optionally, add the grid line to the chromatograms (select the check box) and change the grid color.
5. Optionally, set custom axis settings (not applicable for normalized graphs). If setting a custom setting for one axis, the other axis is scaled automatically.

Sample Table

The columns in the table are chosen in the **Report Column Format** when **Calibrator** is chosen as the **Report Type**. The default columns are **Peak Name**, **Mean Area**, **Amount**, **Standard Deviation**, **Covariance**, and **Number Average**. For more information, refer to Report Column Format - Contents on page 114.

Run Variables

If this check box is selected, variables shown in the sample list will be reported with the values used to satisfy those variables.

Calibration

Choose whether to include the calibration plot and/or plot table:

1. On the **Method Builder Analysis - Report** tab, click Calibration Contents....
2. When the **Calibration Contents** dialog appears, use the check boxes to turn off or on the plot and the plot table.

Error Handling Tab

Error Handling tells the software what types of checks to do on the calculated peak amounts and how the software responds if it detects an error.

The software can perform validation and system performance checks on peaks in samples.

The **Error Handling** tab lists the error conditions that the software should be aware of when analyzing data using the method.

For information about control error handling, refer to Error Handling Tab on page 91.

How to Set Up Analysis Error Handling

Selecting a peak name and indicating error conditions for it activates error handling. What happens during a run then depends on whether an error method is chosen and whether the **Resume Run** check box is selected.

- If neither a method nor the **Resume Run** check box is selected, the run is stopped when the error condition is met.
- If both a method and the **Resume Run** check box are selected, the software executes the error method and then proceeds to the next step in the sample list.
- If a method is indicated but the **Resume Run** check box is not selected, it executes the error method and then stops the run.
- If a method is not indicated, but the **Resume Run** check box is selected, the software finishes the current step and proceeds to the next step in the sample list.

Indicate Analysis Error Conditions

To specify error conditions:

1. **Peak Name**. Choose the name of the peak to monitor. The list box shows the peaks set in the peak table.
2. **Error Method**. Choose the method to execute when the selected error condition is met. Only methods specified during the save to use for error handling will be available.
3. **Resume Run**. Select this check box if the run should continue even if an error has been encountered. Refer to How to Set Up Instrument Error Handling to see how this check box affects what happens during the run or re-analysis.
4. **Parameter**. In the list box, choose the peak calculation or value to monitor. Then, from the drop-down list, choose one of the mathematical operators: greater than, less than, outside range, less than or equal to, equal to or greater than, or equal to. In the text box, type the monitor value.

   For example, select the parameter INJECTIONS W/O PEAK to activate error handling if a peak is not detected in an injection.

   NOTE When monitoring % CONCENTRATION, the software only monitors sample type STANDARD.

5. Click **New**.
6. Repeat for the next peak or parameter.

Modify Analysis Error Conditions

To modify an error condition set for a peak:

1. Select the row with the peak name in the table.
2. Make desired changes.
3. Select **Modify**.

Delete Analysis Error Conditions

To delete error conditions set for a peak:

1. Select the rows in the table.
2. Right-click, and then select **Delete**.

How to Create an Analysis

1. Right-click on a data channel in the **Configured Instruments** panel and then do one of the following:
   - Select **New Analysis**. Set the peak integration (refer to Peak Integration Tab on page 102), report (refer to Report Tab on page 113), and error handling options (refer to Error Handling Tab on page 123) for the analysis.
   - Select **Browse Analysis** and then **Saved Analysis** to associate an existing analysis from any method to the data channel. Any changes to the analysis will be reflected in all copies of the analysis with the same name in any method.
   - Select **Browse Analysis** to associate an existing analysis from the current method to the data channel. Any changes to the analysis will be reflected in all copies of the analysis with the same name.
2. Optionally, select **Rename Channel** to rename the data channel.
3. Right-click on an analysis and then select **Default Analysis** to specify which analysis TRILUTION LC will use during the run for the associated data channel.
4. Optionally, right-click on an analysis and then select **Rename Analysis** to rename the analysis.

Remove an Analysis

On the **Configured Instruments** panel, select an analysis, and then right-click to view the submenu. From the submenu, select **Remove Analysis**.

Integration Tasks

When you first open an **Analysis window** (**Peak Integration** tab), the following integration events are set at 0.00 minutes:

- Default Baseline
- Inhibit Negative Peak Integration
- Analysis Settings

For most separations, these are the only events to set; however, you can delete or modify these events, if necessary.

> **NOTE**
>
> **Integration always begins at analysis time 0. Analysis time 0 begins at the start of data collection in the control. If integration tasks are deleted or moved away from time 0, the default parameters for the integration tasks will be used at time 0 until the first integration task. The default baseline is Default Baseline. Negative Peak integration is inhibited. The default Front and Back Slopes are 25, the default Peak Width is 0.20 min, and the default Peak Filter is 0.00 min. Removing the Inhibit Negative Peak Integration event does not turn on negative peak integration. Insert an Enable Negative Peak Integration event at the time point at which to start negative peak integration.**
>
> **Removing the Inhibit Negative Peak Integration event does not turn on negative peak integration. Insert an Enable Negative Peak Integration event at the time point at which to start negative peak integration.**

To be integrated, a peak must elute during data collection. Furthermore, every contour rising from and falling to the baseline must meet the peak detection criteria. 600 peaks per run can be integrated.

The software's ability to integrate peaks depends on the Analysis Settings. These settings give information to the software about the size and shape of your peaks and the noise level riding the baseline. However, if one or more peaks of interest are not integrated, modify some or all of these parameters before subsequent runs or re-analysis processing.

The following table shows the icons representing integration events.

TOOL	ICON		DESCRIPTION
Baseline	Default Baseline		Default Baseline
Baseline	Horizontal Baseline		Horizontal Baseline
Baseline	All Valleys Baseline		All Valleys
Baseline	Tangent Skim Baseline		Tangent Skim
Baseline	Next Valley Baseline		Next Valley
Integration	Inhibit Integration	Enable Integration	Inhibit/Enable Integration
Negative Peak	Inhibit Negative Peak Integration	Enable Negative Peak Integration	Negative Peak
Analysis Settings	Analysis Settings		Analysis Settings

TOOL	ICON		DESCRIPTION
Fraction Collection	Start Integration by Fraction Collection	Stop Integration by Fraction Collection	Start/Stop Integration by Fraction Collection

Analysis Settings

Consider the angle of the peak's ascending and descending edge when setting the values for **Front Slope** and **Back Slope**. The default value for front and back slopes is 25. If the peak has significant tailing, the **Back Slope** value should be increased to reduce the amount of the tail that is integrated or decreased to increase the amount of the tail that is integrated. Smaller **Front Slope** values will integrate smaller, sharper peaks. To reduce the number of small peaks integrated, increase the **Front Slope** value.

The **Peak Width** setting is the size of the data window that is used to calculate whether the slope condition has been met. The default is 0.20 min. If the trace has a lot of noise, set a higher value to reduce the number of smaller peaks that are integrated or set a lower value to increase the number of smaller peaks that are integrated.

By default, co-eluted peaks are not integrated. To integrate co-eluted peaks, select the Co-eluted Peaks check box.

Peak Filter is defaulted to 0 min, indicating that **Peak Filter** will not be used when determining integration. A peak will not be integrated if the peak width at half height is less than or equal to the **Peak Filter** setting.

Baseline

TRILUTION LC provides several baseline options. If you change the baseline selection, the software uses the first affected peak to determine when to use the new selection. The first affected peak is the peak whose end follows the scheduled time. Therefore, when applying an alternate baseline selection within a series of peaks, enter a time that coincides with the peak retention time. Change baselines sparingly and carefully so that data are analyzed in a meaningful way.

Accurate peak integration depends on the shape of the baseline, which in turn depends on the peak shape and on the resolution from neighboring peaks.

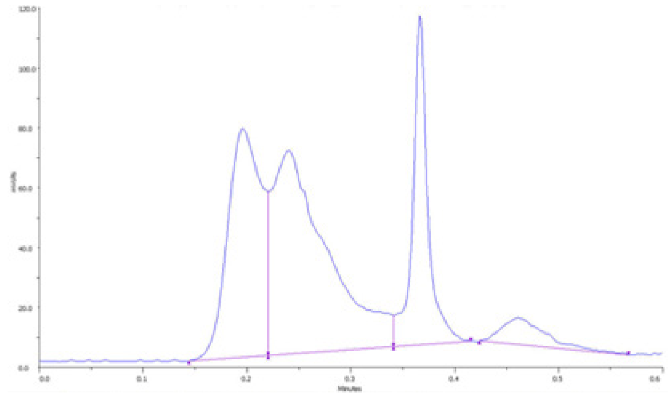
Changes to the baseline remain in effect until the next **Baseline** task is scheduled.

For examples of the effect of baseline selection on merged or resolved peaks, refer to **Effect of Baseline Selection on page 635**.

A description of each baseline option follows. The default is **Default Baseline**.

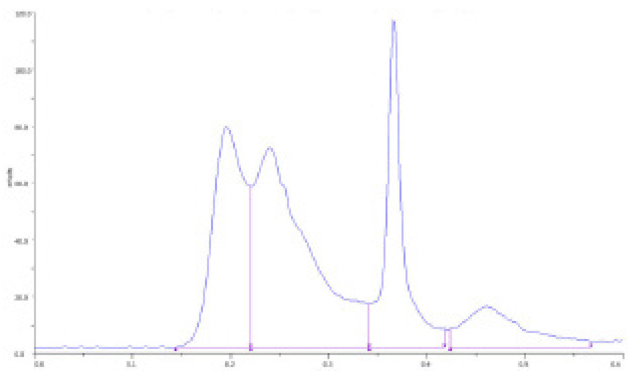
Default Baseline

Baselines are drawn from the start and end of each peak. If the software encounters merged peaks (no baseline resolution between peaks), Default Baseline draws a straight line from the start of the first merged peak to the end of the last merged peak, and drops perpendicular lines from the valley of each merged peak to the new baseline. The start and end point of each peak may be shifted to prevent the baseline from crossing the chromatogram trace.

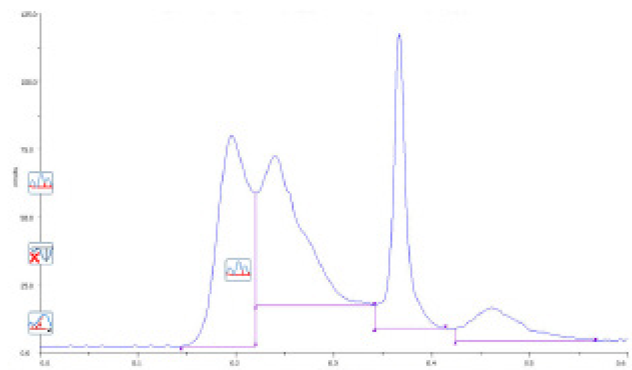


Horizontal Baseline

Draws a forced horizontal baseline. The first peak after the horizontal baseline task determines the baseline level. If the trace drops below the current horizontal baseline, a new horizontal baseline is drawn. Perpendiculars are drawn from each peak start and each peak end to the baseline. The baseline level remains the same until a peak (peak start or peak end) falls below the horizontal baseline or a new horizontal baseline task is scheduled.



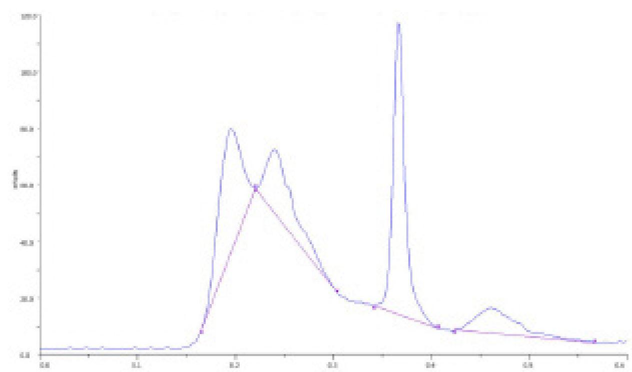
Horizontal Baseline Task at Time 0



Horizontal Baseline Tasks at Times 0 and 0.2 min

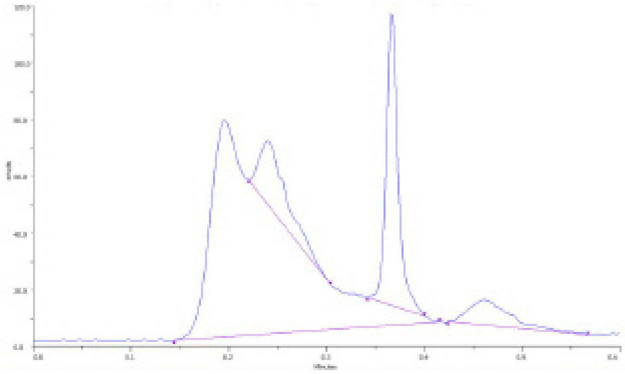
All Valleys

The All Valleys option forces the start and end point to the valley of the chromatogram trace. The start and end point of each peak may be shifted to prevent the baseline from crossing the chromatogram trace.



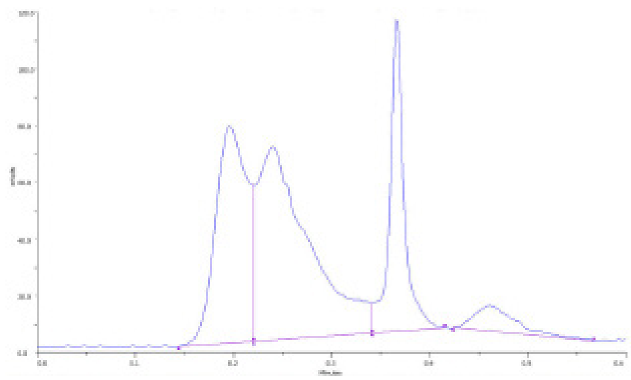
Tangent Skim

Baselines are drawn from the start and end of each peak. If the software encounters merged peaks (no baseline resolution between peaks), Tangent Skim moves the integration endpoint of the first merged peak to the end of all the merged peaks, and then draws a line tangent to all of the remaining peaks within the start and new end of first merged peak. The start and end point of each peak may be shifted to prevent the baseline from crossing the chromatogram trace.

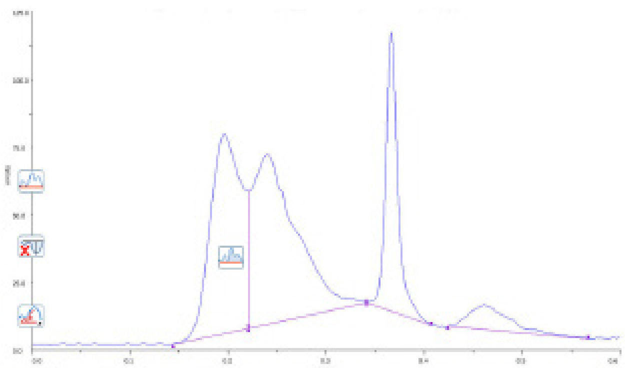


Next Valley

The Next Valley task baseline technique applies only to the next peak after the task. When the start of the next peak is a merged peak (no baseline resolution between peaks), Next Valley technique moves the baseline to the valley of the trace. The Default Baseline technique is used for all of the remaining peaks. The start and end point of each peak may be shifted to prevent the baseline from crossing the chromatogram trace.



Default Baseline



Default Baseline at Time 0
Next Valley Baseline at Time 0.2 min.

Inhibit/Enable Integration

If a region of a trace is uninteresting to you or if a region contains many unresolved peaks, you can inhibit integration during that period. Schedule one task to inhibit integration. Then schedule another task for the time at which to resume integration. This technique can eliminate a large number of uninteresting peaks from being listed in reports.

For more information on scheduling timed tasks, refer to **Schedule Timed Integration Tasks on page 135**.

Negative Peak

If a region of the chromatogram contains negative peaks, you can tell the software to integrate those peaks. Schedule one timed task to enable integration. Then schedule another task at the time to disable integration.

For more information on scheduling timed tasks, refer to **Schedule Timed Integration Tasks on page 135**.

Start/Stop Integration by Fraction Collection

Uses slope, specified in the **Analysis Settings** integration task, to determine the integration baseline and uses the fraction collection start and stop lines for the start and end of the baseline. The fraction collection start (solid green vertical line) and end (dashed red vertical line) must occur within the peak analysis start (arrow up) and peak analysis end (arrow down) for the peak to be integrated using integration by fraction collection. The following diagrams show how the integration of a peak differs when integrating by fraction collection. For this example, the analysis start and end are outside the fraction collection window.

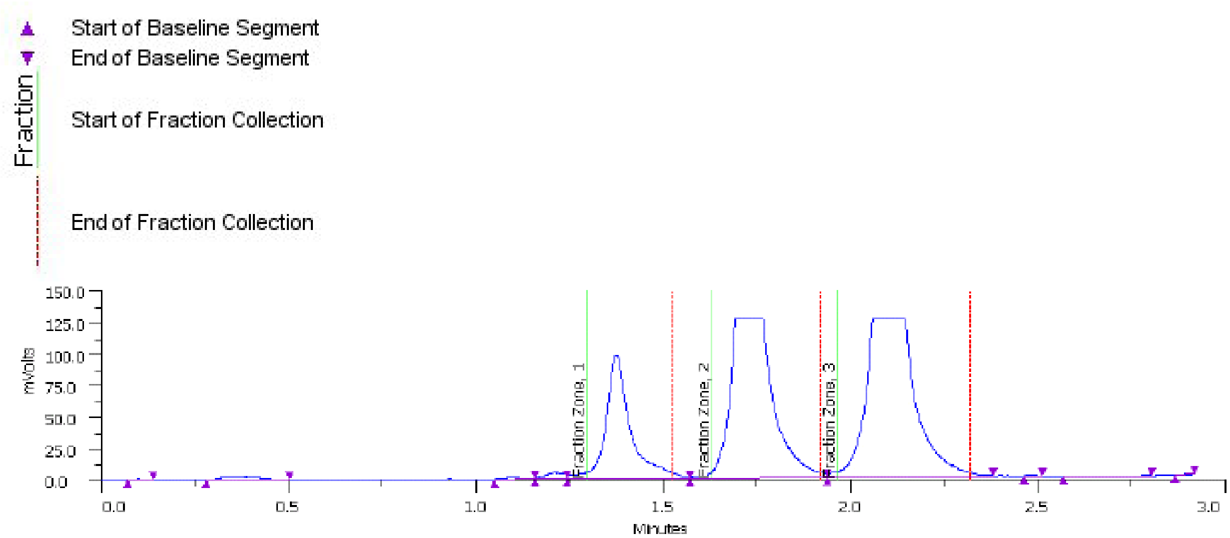


Diagram 1: Fraction Collection by Level - Integration by Analysis Settings

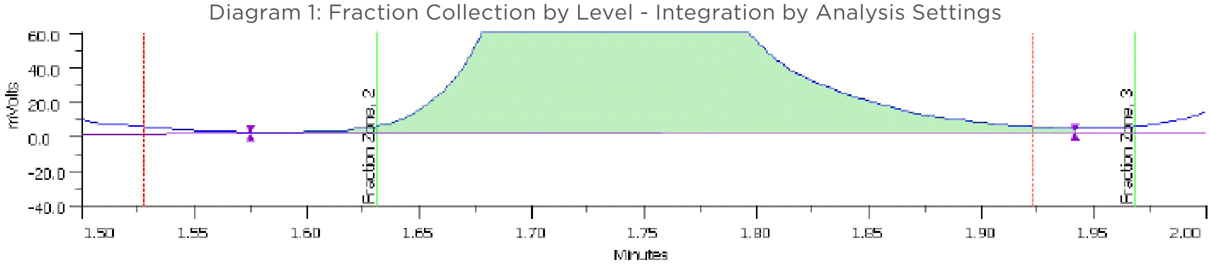


Diagram 1a: Fraction Collection by Level - Integration by Analysis Settings

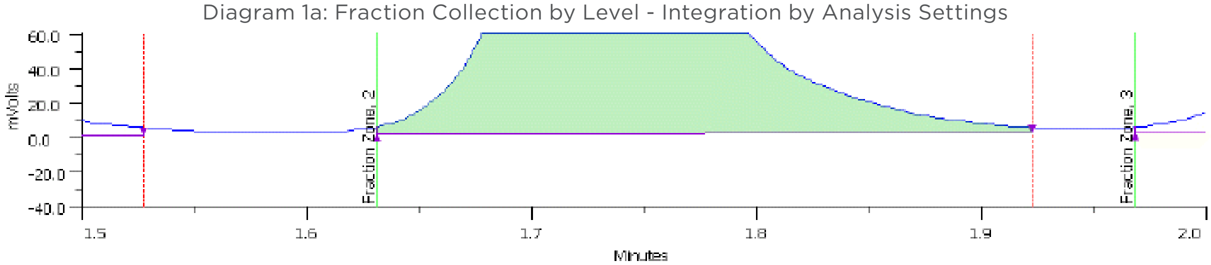


Diagram 1b: Fraction Collection by Level - Integration by Fraction Collection

How to Define Retention Time Windows

Reference and non-reference peaks in unknown samples are located by matching actual retention times to retention times listed in the analysis peak table. To compensate for possible retention time drift, the software defines a time window around each expected peak. It finds an expected peak if that peak lies within the retention time window.

You can modify the Absolute Error and/or Relative Error parameters to control the width of retention time windows.

Absolute error is a constant amount of time flanking a peak's nominal retention time. The software automatically searches for eluted peaks at every named retention time plus or minus this amount of time.

Relative error is a percentage of peak retention time. Relative error and, therefore, the width of retention time windows, increases with increasing retention time. Because late-eluting peaks are often broader than early peaks, the software adds this correction factor to improve the likelihood of locating late-eluting peaks.

You can calculate the beginning and end of any peak's time window using the following formulas:

Beginning: Ret. Time - [Abs. Error - (Ret. Time x Rel. Error)]

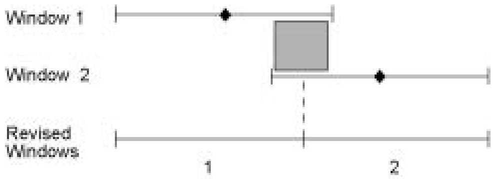
End: Ret. Time + (Abs. Error + Ret. Time x Rel. Error)

Resolve Overlapping Retention Time Windows

Retention time windows must be wide enough to permit detection of every peak yet narrow enough to minimize windows overlapping. Overlapping can occur if windows are too wide or if peaks are too close together. Since the software cannot know whether a peak belongs to the earlier or later window in an overlapping pair, it uses the following algorithm during data analysis to revise the limits of both windows and to establish a new boundary between them. The following examples are presented in the order of least to most amount of overlap.

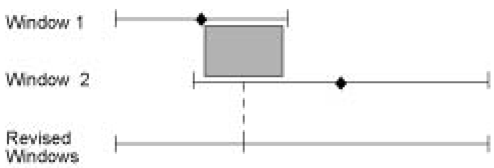
Type 1

When the beginning of window 2 occurs after the midpoint of window 1, a new boundary is established at the midpoint of the overlapping region.



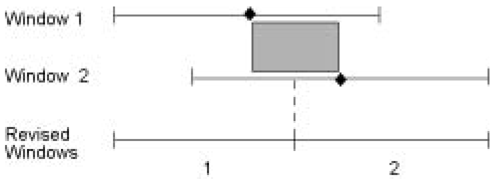
Type 2

When the beginning of window 2 occurs before the midpoint of window 1, a new boundary is established midway between the midpoint and end of window 1.



Type 3

When the midpoint of window 2 occurs at any time during window 1, a new boundary is established midway between the center of window 1 and the center of window 2.



How to Use the Peak Table During Data Analysis

When the software begins to analyze data collected during a run, it looks for the reference peaks and non-reference peaks that you identified in the peak table. It knows where to look because you set the peak retention times and retention time window parameters.

After finding the peaks, the software checks the retention times of those peaks and updates its peak table so it knows when to expect those peaks in the next sample.

Reasons for Missing Peaks

The software might fail to identify reference or non-reference peaks if:

- the peak slope, peak width, and peak filter were incompatible with chromatogram peaks
- the wrong sample was injected
- changing chromatographic conditions (flow rate, mobile phase composition, pressure, temperature) or leaks in the system resulted in inconsistent retention times
- an insufficient number or a poor choice of reference peaks were named
- the absolute error and/or relative error need to be adjusted

Locate Reference Peaks

When you create a peak table, you can specify retention times for one or more reference peaks. The software looks for peaks named in the peak table whose actual retention times fall within the reference peaks' time windows.

Use reference peaks cautiously. An ideal reference peak is a large, well-separated, isolated peak with a consistent retention time.

If, during data analysis, it finds a peak in a retention time window, it presumes it found the desired reference peak. As the software identifies reference peaks, it constructs an internal graph of actual retention times versus expected retention times.

If two or more peaks fall within the same reference peak time window, it chooses the largest one as the reference peak. If two peaks in a window are equally tall, the earliest peak is chosen as the reference peak.

Locate Non-Reference Peaks

Using the internal graph, described previously, the software updates the expected retention times (and retention time windows) for all non-reference peaks named in the Peak Table. It then looks for non-reference peaks named on the peak table whose actual retention times fall within a corrected retention time window.

If the software finds such a peak, it presumes it is the desired non-reference peak. If two or more non-reference peaks fall within the same window, it chooses the earliest peak whose retention time is closest to the window's center.

Update Peak Retention Times

Over the course of multi-sample runs, retention times could drift so much that peaks would elute outside their original time windows. To ensure that the software always knows the most likely retention time of each named peak, the software continuously updates the retention time windows of reference and non-reference peaks on its internal peak table.

In the first sample, the software expects that named peaks have the retention time specified in the peak table. In each subsequent sample, it adjusts the expected retention time according to information it gathers during the run.

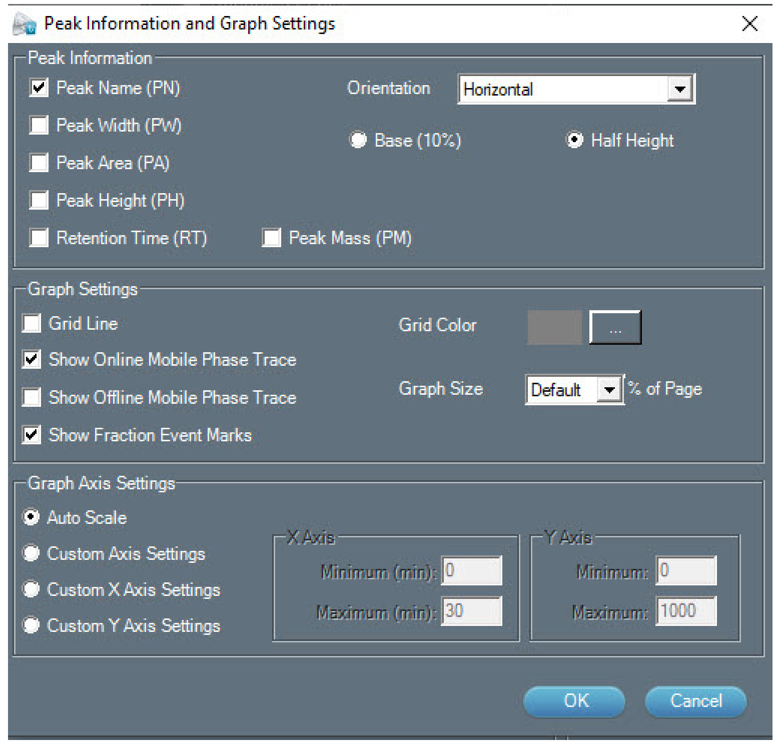
The new midpoint of each peak's retention time window is calculated as a weighted sum of each peak's previously determined window midpoint (75%) plus its retention time in the current sample (25%). A weighted sum is necessary to minimize the influence of a single bad sample in a multi-sample run.

For example, after several samples, the midpoint of a peak's retention time window is at 3 minutes. In the next sample, that peak's retention time was 3.2 minutes. On the software's peak table, the midpoint of the retention time window is adjusted to 3.05 minutes.

(3 minutes x 0.75) + (3.2 minutes x 0.25) = 3.05 minutes

This updating only occurs if all reference peaks are found in the current sample. If all reference peaks are found, the retention time window of each reference and non-reference peak found during that sample is updated as described previously.

How to Create an Analysis Report



The analysis report contains the data and peak information from each injection in the sample list.

An analysis report can contain any or all of the following:

- Annotation
- Graph or Normalized Graph
- Sample Table
- Spectrum
- Run Variables
- Grouped Peaks

Specify contents of the analysis report on the **Method Builder - Analysis - Report** tab by selecting the check box under **Analysis Report Elements** for each element to include.

After the application run completes, view the analysis report from the **Reports** window. For more information, refer to Reports on page 222.

Annotation Contents

Choose which parts of the report's annotation will be viewed and printed.

1. On the **Method Builder - Analysis - Report** tab, select **Annotation Contents...** .
2. When the **Annotation Contents** dialog appears, use the check boxes to turn off or on parts of the annotation.

Graph Settings

You can choose whether to display a graph, a normalized graph, or both and how peaks are labeled in the report's graphs and the run results.

1. On the **Method Builder - Analysis - Report** tab, click **Graph Settings...** .
2. When the **Peak Information and Graph Settings** dialog appears, use the check boxes to turn off or on labels on the graph.

   If **Peak Mass (PM)** is selected, each peak on the chromatogram will be labeled with its most abundant m/z value.
3. Specify the size of the chromatogram (**Graph Size**) as a percentage of the page. The graph is printed on a different page than the annotation, if necessary.
4. Optionally, add the grid line to the graph (select the check box) and change the grid color.
5. Optionally, set custom axis settings (not applicable for normalized graphs). If setting a custom setting for one axis, the other axis is scaled automatically.

Sample Table

The columns in the table are chosen in the **Report Column Format** when **Sample** is specified as the **Report Type**. The default columns are **Injection Number**, **Peak Name**, **Retention Time**, **Area**, **Height**, **Sample Name**, **Sample Location**, and **Fraction Site(s)**. For more information, refer to Report Column Format - Contents on page 114.

Spectrum Settings

You can choose whether spectral views will be displayed and how they will be displayed in the analysis report.

1. On the **Method Builder - Analysis Report** tab, click **Spectrum Settings...** .
2. When the **Spectrum Settings** dialog appears, select the tab for the options that you want to set: **Diode Array Spectrum** or **Mass Spec Spectrum**.
3. Use the check boxes to select which spectral views to display in the analysis report.
4. Specify the minimum and maximum wavelengths (DAD) or masses (MS) to display, color scheme (3D and Iso-electric plots only), and elevation angle and rotation (3D plot only).
5. Specify the size of the spectrum as a percentage of the page.
6. Select to report the **Peak Spectra** at the **Retention Time** or for the **Entire Peak** and/or the **Peak Fraction Spectra** in the report (MS only).

Run Variables

If this check box is selected, variables shown in the sample list will be reported with the values used to satisfy those variables.

Grouped Peaks

If this check box is selected, the sum total area for all grouped peaks will be calculated and displayed in the report.

Auto Action

For information about auto print and auto export options, refer to Auto Action on page 120.

Schedule Timed Integration Tasks

Each command issued in the method analysis is referred to as an integration task.

NOTE **Unlike other tasks, these tasks cannot be opened in the Task Builder.**

You can specify integration tasks that set the baseline, inhibit or enable integration, inhibit or enable negative peak integration, set the peak slope, peak width, and peak filter, and start or stop integration by fraction collection.

By dragging tasks into the analysis, you tell the software when to collect peaks.

Within the properties box, there is a **Time** box for indicating the time point at which to issue the task.

For information about using variables for task properties, refer to Create a New Variable (Method Builder) on page 218.

Add Integration Task to Analysis

1. Drag the icon () to the analysis.
2. Indicate time and command parameters. Allow at least 0.01 min between integration tasks.

> ***NOTE***
> **During a run, the integration task time is based on the time at which data collection begins in the control. The change is applied to the first peak whose end follows the integration task time. When applying an alternate baseline in a series of close peaks, choose a time that corresponds to the retention time of the first peak of interest.**

3. Click **OK**.

Modify Integration Task

To modify the task:

1. Right-click the task.
2. Select **Property**.

Delete Integration Task from Analysis

To remove a task, select the task and then do one of the following:

- Right-click and then select **Delete**.
- Press the **DELETE** key.
- Drag the task to the trash bin.

APPLICATION RUN

In the Application Run window, specify the list of steps (referred to as a sample list) to execute during a run. A step in the sample list identifies the method to run. For more information, refer to How to Create a Sample List on page 147.

After setting up the sample list, start and monitor the progress of the run. For more information, refer to Running an Application on page 153.

Manual Control is accessed from the Application Run window. For more information, refer to Manual HPLC System Control.

Key concepts to understand about the Application Run window are:

- How to Create a Sample List on page 147
- How to Create a Sample List for Fraction Collection
- How to Export a Sample List
- How to Import a Sample List

Application Run Window

Access the Application Run window by:

- right-clicking an application in the Project Library and then selecting **Run** or
- selecting an application in the Project Library and then clicking **Run** or
- opening a saved method in the Method Builder and then clicking **Run**.

The Application Run window includes:

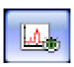
- Title Bar
- Application Run Toolbar
- Status Box
- Run Time
- Pause Time
- Sample List Toolbar
- Sample List Name
- Sample List Columns
- Run Name
- Maintenance Alarm Reminder
- Method Configuration Toolbar
- Chromatogram Tab
- Bed Layout Tab
- Mass Spec Spectra for Fractions Tab
- Action Buttons
- Info Window

Title Bar

The title bar displays the name of the open application and the user name.

Application Run Toolbar

Select an icon at the top of the **Application Run** window to perform the action described below.

ICON	LABEL	DESCRIPTION
	Manual Control	Opens the Manual Control window. For more information, refer to **Manual HPLC System Control on page 166**.
	Manual Advance	Available only when collecting fractions during a run. For more information, refer to **Running an Application on page 153**
	Divert Valve	Available only when collecting fractions during a run. For more information, refer to **Running an Application on page 153**
	Show Graph in Cascade Mode	Available only when collecting data during a run. For more information, refer to **Running an Application on page 153**
	Show Graph in Tiled Mode	Available only when collecting data during a run. For more information, refer to **Running an Application on page 153**
	Gradient Hold	Available only during a run when a mobile phase pump is in the configuration. For more information, refer to **Running an Application on page 153**
	Solvent Settings	Available only when a mobile phase pump is in the configuration. Allows for indicating the volume of reservoir solvent. When the volume reaches 0, a notification is sent, if indicated in the Notification utility.

Status Box

The status box displays status information for the components of the HPLC system. The following information, if applicable, is displayed here: mobile phase flow rate, composition, and pressure, detector signal, contact state, make up pump flow rate and pressure, and MS detector status.

Hover the cursor over the status box to view the information in a tool tip.

Run Time

During the run, the **Run Time** field displays the time that has passed since the start of the current running method.

Run time may be paused, depending on the **Sync** task settings. For more information, refer to **Sync on page 569**.

Pause Time

During the run and only while the application is paused, displays the time that has passed since the application was paused.

Pause the application by doing one of the following:

- starting a Sync task (paused while the software waits)
- clicking the Pause action button
- starting a gradient hold

Sample List

SAMPLE LIST TOOLBAR

The sample list is a list of steps to execute during a run. For information about creating a sample list, refer to How to Create a Sample List on page 147.

Click an icon to perform the action described below.

ICON	LABEL	DESCRIPTION
	Sample List Import	Allows for importing Sample List (.TSL) files. For more information, refer to How to Import a Sample List on page 152.
	Sample List Export	Saves the current sample list to a selected location as a .TSL file. For more information, refer to How to Export a Sample List on page 151.
	Initial Volume	Allows for setting initial volumes for any or all wells in each bed layout in the application. For more information, refer to Set Initial Volumes on page 150.
	Fraction Re-Injection	Allows for setting fraction re-injection criteria and for selecting the method to re-inject the fractions. To not re-inject fractions after setting criteria, clear the Auto Re-injection check box. For more information, refer to How to Create a Sample List to Re-inject Collected Fractions on page 149
	Fraction Counter	Allows for setting the minimum number of fraction sites required for each injection. If the specified number of fraction sites are not available on any one fraction collector prior to the injection, the application skips to the next step in your run, which prevents the sample from being lost.
	Refresh	Refreshes the sample list.

RIGHT-CLICK MENU

Select a row, and then right-click to display the following options.

MENU	DESCRIPTION
Add Sample	Adds the first sample to a new list or adds a sample to the bottom of the list.
Add Multiple Samples	Adds a user-specified number of samples to the bottom of the list.
Insert Sample	Adds a sample between two existing samples.
Clear Sample	Clears a sample row of all values, but keeps the row in the sample list.
Delete Sample	Removes a sample from the sample list.
Paste Row Special	Pastes a user-specified number of copies of the selected sample after the selected sample row.
Open Method	Opens the method in the selected sample row in the Method Builder.

Select as Shutdown	Identifies the sample row in the sample list running an optional shutdown method. For more information, refer to Specify a Shutdown.

The following options are available after right-clicking on a pending sample.

OPTION	DESCRIPTION
Run	Functions as a resume or continue when a sample/step has been paused.
Skip	Select to skip the sample/step.
Pause	Select to pause a sample/step. Right-click and then select Run to run the sample/step

ADDITIONAL COPY/PASTE OPTIONS

The sample list control in TRILUTION LC includes options for copying and incrementing within some columns and rows similar to spreadsheet programs. Refer to the following guidelines:

COPYING/INCREMENTING WITHIN A COLUMN

- Only number values in number fields can be incremented. To increment the contents in a column, click in the first cell and drag down through the cells to increment. The cursor displays as a plus sign (+) briefly on the right edge of the cell when the value can be incremented.
- To copy the contents of one cell to others in the same column, click in the cell with contents to be copied and then hold **CTRL** and drag down through the cells to which the contents should be copied. The cursor displays as a plus sign (+) briefly on the right edge of the cell when the value can be copied.
- Select the cell to be copied and then hold **CTRL + C**; select the destination cell and then hold **CTRL + V**.
- **Method Name** selections cannot be copied within a column, alternatively, copy and paste the entire row.

Copying/Pasting a Row

- Select the row to be copied and then hold **CTRL + C**; select the destination row and then hold **CTRL + V**.
- Select the row to be copied and then when the cursor changes ( ), drag and drop the row at the destination.

SAMPLE LIST NAME

The **Sample List** field displays the name of the open sample list.

SAMPLE LIST COLUMNS

When a new sample list is created, columns for **Method Name**, **Sample Name**, and **Notes** appear by default.

Additional columns include:

- Amount
- Sample Description

- Report
- Sample Type
- Sample Re-injection

Other columns appear depending on the variables set in your method. For example, if an injection task in a method requests inputs, such as sample volume and sample location, columns labeled **#Sample Volume** and **#Sample Location** appear. If one of the inputs requests the fraction site at which to begin collection, refer to How to Create a Sample List for Fraction Collection on page 147.

Columns can be shown or hidden. Right-click on a column name, and then select the column name from the menu. Doing so toggles the column to hide. Repeat to toggle the column to show.

Columns can be re-sized by dragging the column border in the column header.

Columns can be moved by dragging the column to a new location.

Saved sample lists include shown columns and selected widths.

For information about creating a sample list, refer to How to Create a Sample List on page 147.

Method Name

This column is required. Select a method from the drop-down list of methods in the application. This is the method that will be used when the selected sample is run.

If the method is deleted after the sample list was saved, the sample list can be opened, but samples referencing that method will be removed. Review, and then save the sample list again.

Sample Name

This column is optional. Click in the cell and type a name that describes the sample (the default is **Sample**). This name appears in the run-time chromatogram and the Samples drop-down list in the **Run Results** window, and optionally, in reports.

Notes

This column is optional. Double-click in the cell and then type text to appear in the run, analysis, and calibration reports.

NOTE Use alphanumeric characters and spaces only (no special characters).

Amount

This column is optional. Type an amount to be used when monitoring percent concentration for analysis error handling.

Sample Description

This column is optional. Click in the cell and type a name that describes the sample (the default is **Sample Description**).

Report

This column is optional. Right-click on a column name and then toggle the Report column to show.

Select **YES** from the drop-down list to include the sample in all reports. Select **NO** from the drop-down list to exclude the sample from all reports, except the run report.

To include the sample in the report after the run has completed, first view the results, then browse for an analysis, and then re-analyze.

Sample Type

This column is required. There are four choices (BLANK, CONTROL, UNKNOWN, and STANDARD) in the drop-down list. The default is UNKNOWN.

BLANK

A blank sample is generally the mobile phase solvent. A run with a blank solvent enables the software to subtract the solvent noise from an actual run.

CONTROL

A control sample is a reference sample containing the target analyte of a known amount.

When the sample is identified as a control, the **Standard Information** dialog appears. Enter a value for the **Actual Amount** and optionally, for the **Nominal Amount**.

Actual Amount

Actual Amount is the amount you actually measured to prepare a particular control sample.

Nominal Amount

Nominal Amount is the amount you wanted to measure.

UNKNOWN

The unknown sample is the interest of analysis. The amounts with area/height are reported according to the standard sample used for calibration.

STANDARD

The standard sample is a sample with known amounts. A standard sample run for multiple times provides calibration points. The amounts in unknown sample are reported in the software in proportion to the calibration points.

When the sample is identified as a standard, the **Standard Information** dialog appears. Enter a value for the **Actual Amount** and for the **Nominal Amount**.

A peak specified as an internal standard is identified by a change in color for the row label.

Actual Amount

Actual Amount is the amount you actually measured to prepare a particular standard sample.

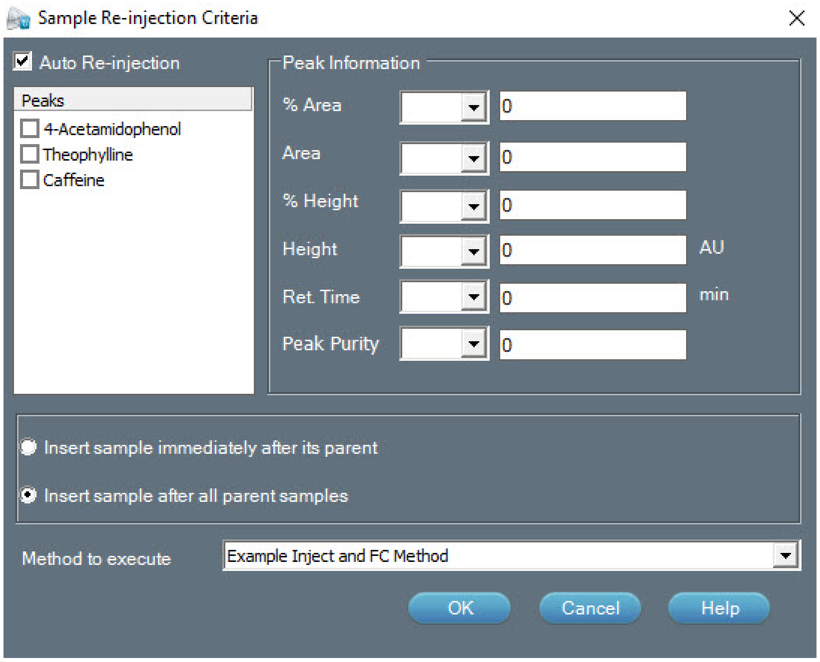
Nominal Amount

Nominal Amount is the amount you wanted to measure.

Sample Re-injection

This column is optional and is used if you want to re-inject a sample based on either a named peak or an unknown peak meeting specified peak criteria in the default analysis on the primary channel.

NOTE If you set both fraction and peak re-injection criteria and both are met, only fractions will be re-injected.



To set peak criteria for re-injecting a sample:

1. Right-click on a column name and then toggle the **Sample Re-injection** column to show.
2. Ensure that a method has been selected and then select . The **Sample Re-injection Criteria** dialog appears.
3. Select the **Auto Re-injection** check box.
4. Select the check box next to the name of each peak to be considered. If no peaks are selected, all peaks will be considered.
5. Specify the criteria for the peaks. Each criterion is considered independently. If any of the peaks meet any of the criteria, the sample will be re-injected.
6. Select an operator (null, greater than, or less than). If null is selected, the criterion will be ignored.
7. Type a value.
8. Choose, by selecting the corresponding option button, whether to:
    - insert the sample immediately after its parent or
    - after all parent samples (at end)

    If you will be using a shutdown method, you can specify a step in the sample list for the shutdown and then the sample will be inserted after all parent samples and before the shutdown. Refer to Select as Shutdown on page 156.
9. Select the method to execute when re-injecting the sample.
10. Repeat for each sample in the sample list as desired.

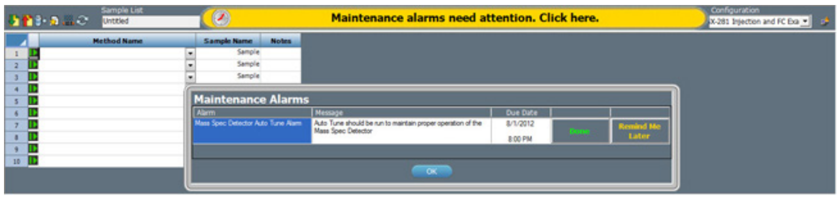
Run Name

Type a name for the run (50 characters maximum) that will be used to identify the run in the **Results Window** and in **Reports**. (The default is the current date and time at the start of the run.)

Maintenance Alarm Reminder

A clock will be visible when accessing the **Application Run** window if an alarm is due soon. Hover the mouse over it or click to view a listing of the alarms due soon.

If an alarm is due or overdue, a yellow bar appears in the **Application Run** window informing that **"Maintenance Alarms need attention. Click here**." Click the bar, select an alarm, and then select **Done** or **Remind Me Later**. If **Remind Me Later** was selected, the yellow bar will appear again the next day.



Method Configuration Toolbar

The configuration selected will display in the status box.

ICON	DESCRIPTION
	After selecting a method from the drop-down list of all methods in the application, click to set the method's configuration that will be monitored in the status box prior to beginning the run. To set a default for this selection, set a method in the application as the **Application Default** in the **Project Library**.

Chromatogram Tab

The chromatogram tab shows the run-time chromatographic plot of acquired data, gradient profile, and run-time events.

The trace begins at the data collection begin time (usually synchronized with injection).

For the gradient profile, the mobile phase composition (Y-axis—labeled % Mobile Phase) is plotted with respect to time (X-axis).

Chromatogram Toolbar

The chromatogram displays the real-time run data. During the run, choose available functions using the icons in the chromatogram toolbar. For more information, refer to Running an Application. All settings are temporary and revert to the **Graph Settings** (refer to Graph or Normalized Graph) and Data Channel Settings on the Method Builder-Analysis-Report Tab at the start of each sample.

Bed Layout Tab

When creating a sample list, you can view the bed layout, select multiple wells, and have the software generate steps in the sample list.

1. Open the Application Run window.
2. Select a method containing a well variable.

3. Place the cursor in the first cell for which to select a well.
4. Click to select the Bed Layout tab.
5. Select a bed layout and a zone from the drop-down lists. Available wells appear in the zone's active color.
6. Choose multiple well locations as described below.

   To select random wells within one zone:

   a. Press the **CTRL** key and then select each well.
   b. Click **Add Single** and all wells selected will be added as one row in the sample list or click **Add Multiple** and each well selected will be added as its own row in the sample list.

   To select a range of wells within one zone:

   a. Lasso the range of wells.
   b. Click **Add Single** and all wells selected will be added as one row in the sample list or click **Add Multiple** and each well selected will be added as its own row in the sample list.

   NOTE Zoom, if necessary. For more information, refer to Zoom on page 729

7. Review the sample list and, if necessary, enter or change the sample description for each sample.

Mass Spec Spectra for Fractions Tab

On the **Mass Spec Spectra for Fractions** tab, the background subtracted mass spec fraction spectra is displayed as it is collected (if applicable).

Action Buttons

The following action buttons are in the lower left corner of the **Application Run** window.

ACTION BUTTON	DESCRIPTION
Run/Stop	This option begins the application run. To stop the run, click **Stop**. You will be asked if you want to save data for the current sample. The mobile phase composition and flow conditions in effect at the time of termination remain in effect.
Pause/Resume	Only available during a run.
Stop Pump	Stops flow from the mobile phase pumps, but is only available until the run starts.
Emergency Stop	Only available during a run.
New	Creates a new sample list. For more information, refer to **How to Create a Sample List on page 147**.
Open	Opens an existing sample list.
Save	Saves the current sample list (including shown columns and widths) to the application.
Save As	Saves a new sample list or saves an existing sample list to a new name. Optionally, type a description for the sample list.
Delete	Deletes the open sample list.

Info Window

The info window lists the names of the current user, the open application, and the open sample list.

During the run, lists run-time events and the time they occurred. For more information, refer to **During a Run on page 153**. After the run, this information can be viewed in the log file. For more information, refer to **View the Log File on page 165**.

How to Create a Sample List

The sample list is an editable grid that specifies how many samples will be run, information about those samples, and qualifies any variables in the associated methods.

Before you set up a sample list, create the methods and, optionally, analyses to use during the run.

1. Access the Application Run window by:
   - right-clicking an application in the Project Library and then selecting **Run** or
   - selecting an application in the Project Library and then clicking **Run** or
   - opening a saved method in the Method Builder and then clicking **Run**.
2. Verify the method configuration. For more information, refer to **Method Configuration Toolbar on page 144**.
3. Select the method to use for the first step. For more information, refer to **Method Name on page 141**.
4. Right-click on a column name and then toggle desired columns to show or unneeded columns to hide. For more information, refer to Sample List Columns.
5. Optionally, organize the columns by dragging them and dropping them in a new position.
6. Fill-in the cells in the sample row.
   - It is possible to copy and paste or increment values in some columns and rows. For more information, refer to Additional Copy/Paste Options.
   - Well variables can be satisfied graphically. For more information, refer to Bed Layout Tab.
7. Repeat steps 3–6 for each additional step. If necessary, add rows to the sample list (refer to Add Sample or Add Multiple Samples).
8. Optionally, set initial volumes. For more information, refer to Set Initial Volumes.Optionally, set fraction re-injection criteria. For more information, refer to How to Create a Sample List to Re-inject Collected Fractions.
9. Optionally, set the number of minimum fraction sites. For more information, refer to How to Create a Sample List to Re-inject Collected Fractions.
10. Optionally, click **Save** to save the sample list.

How to Create a Sample List for Fraction Collection

If you are doing fraction collection, the software can keep track of the wells used for each injection (referred to as continuous collection). Or, you can indicate the well at which to start collection for each injection (referred to as specific site collection).

With continuous collection, you indicate the zone in which collection occurs (Fraction Zone) and then specify 0 for the Fraction Well. For the first injection, collection starts in the first well of the zone. For the second and each subsequent sample collected into the zone, collection will begin in the next available numbered well.

With specific site collection, you indicate both the zone and well at which collection starts for each sample.

You may use both continuous collection and specific site collection within the same sample list.

Refer to the example sample lists that follow.

APPLICATION RUN

Example 1: Specific Site Collection: Collection of Each Sample's Eluent into Same Set of Tubes (One Zone)

If the fractions for each injection are collected into the same set of tubes, ensure that the zone and well specified for the #Fraction Zone and #Fraction Well variables are the same for each sample, for example, specify Fraction Zone for the #Fraction Zone variable for each sample and specify 1 for the #Fraction Well variable for each sample.

	Method Name	Sample Name	Notes	#Fraction Well	#Fraction Zone
1	Control	Sample		1	Fraction Zone
2	Control	Sample		1	Fraction Zone
3	Control	Sample		1	Fraction Zone
4	Control	Sample		1	Fraction Zone
5	Control	Sample		1	Fraction Zone

Example 2: Continuous Collection: Collection of Each Sample's Eluent Into Its Own Set of Tubes (One Zone)

If the fractions for each injection are collected into a different set of tubes, indicate the same zone name for each sample and then specify 0 for the #Fraction Well variable for each sample.

	Method Name	Sample Name	Notes	#Fraction Well	#Fraction Zone
1	Control	Sample		0	Fraction Zone
2	Control	Sample		0	Fraction Zone
3	Control	Sample		0	Fraction Zone
4	Control	Sample		0	Fraction Zone
5	Control	Sample		0	Fraction Zone

Example 3: Continuous Collection: Collection of Each Sample's Eluent Into Its Own Set of Tubes (Multiple Zones)

If the fractions for each injection are collected into a different set of tubes, indicate the zone name for each sample and then specify 0 for the #Fraction Well variable for each sample. The following example uses two zones. Fractions from standard injections (Standard Sample) are collected into one zone (Standard Fractions), and fractions from unknown injections (Unknown Sample) are collected into another zone (Unknown Fractions).

	Method Name	Sample Name	Notes	#Fraction Well	#Fraction Zone	#Sample Zone
1	Control	Sample		0	Standard Fractions	Standard Sample
2	Control	Sample		0	Standard Fractions	Standard Sample
3	Control	Sample		0	Standard Fractions	Standard Sample
4	Control	Sample		0	Unknown Fractions	Unknown Sample
5	Control	Sample		0	Unknown Fractions	Unknown Sample
6	Control	Sample		0	Unknown Fractions	Unknown Sample

How to Create a Sample List to Re-inject Collected Fractions

When setting up a sample list to re-inject collected fractions, use the **Fraction Re-Injection** ( ) button to access the **Fraction Re-injection Criteria** dialog.

To set up a sample list to re-inject collected fractions:

1. Set up the sample list for injections.
2. Click the Fraction Re-Injection ( ) button.
3. Ensure that the Auto Re-injection check box is selected. (It is by default.)
4. On the Fraction Re-injection Criteria dialog, specify the criteria for the fractions to re-inject. Do this by specifying the minimum area of the fractions or the minimum height of the peaks. If both are specified, then both will be used.
5. Choose, by selecting the corresponding option button, whether to:
   - insert the fractions immediately after each parent or
   - after all parent samples (at end).

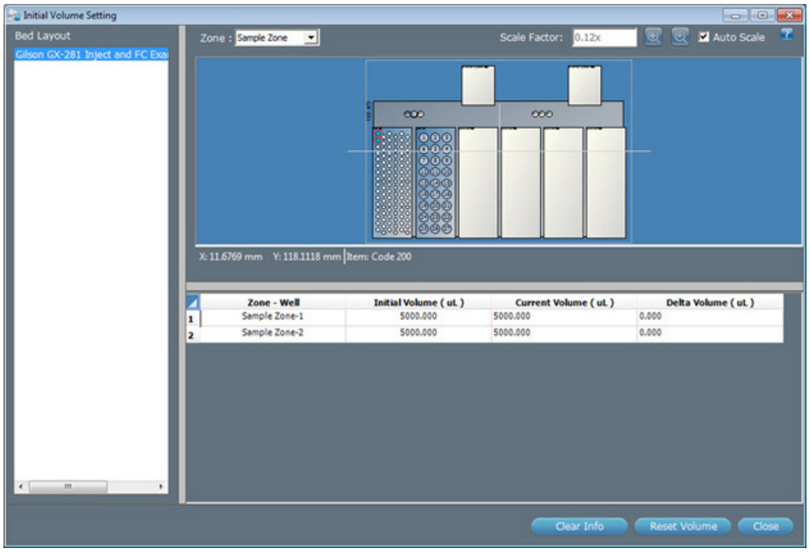
   If you will be using a shutdown method, you can specify a step in the sample list for the shutdown and then the sample will be inserted after all parent samples and before the shutdown. Refer to **Select as Shutdown on page 156.**
6. Select the method to execute when re-injecting the collected fractions.

NOTE	The Sample Zone must be #Sample Zone and the Sample Well must be #Sample Well, defined in the Sample Variable dialog in this method.

7. If you wish to inject the fractions collected when your re-injection method was run, select the Apply Criteria to Re-Injected Fractions check box. It defaults cleared.
8. Optionally, set the minimum number of fraction sites required for each sample:
   a. Click the Fraction Counter ( ) button.
   b. Enter the number of minimum fraction sites required for each sample.
   c. Click **OK**.

APPLICATION RUN

Set Initial Volumes



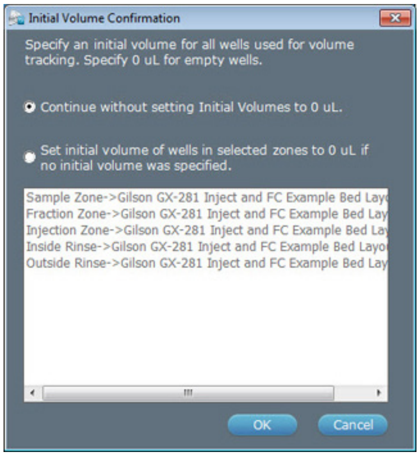
For liquid tracking, click the Initial Volume ( ) button to access the Initial Volume Setting dialog.

To set initial volumes for any or all wells in each bed layout in the application:

1. Create the sample list. For more information, refer to How to Create a Sample List on page 147.
2. Click the Initial Volume ( ) button.
3. Click to select a bed layout.
4. Select a zone.
5. Choose multiple well locations as described below.
   - To select random wells, press the **CTRL** key and then select each well.
   - To select a range of wells, click and drag over a block of wells.

6. Right-click and then select **Set Initial Volume**. The **Initial Volume** dialog appears showing the default value of -1, indicating that an initial volume has not been set for the selected wells.
7. Type the initial volume and then click **OK**.
8. Verify the entries in the grid.

9. Repeat steps 4–8 for additional wells and/or repeat steps 3–8 for additional bed layouts.
10. Click Close. The **Initial Volume Confirmation** dialog appears.
    - Select **Continue without setting Initial Volumes to 0 µL** if you want volume tracking off for wells for which an initial volume was not specified. This is the default selection. For example, if you do not wish to track volumes in the rinse stations, select this option. Rinse volumes will not be tracked unless you specified an initial volume for the rinse station. Even if this option is selected, the Sample Tracking Report will report all aspirate and dispense volumes.
    - Select **Set initial volume of wells in selected zones to 0 µL if no initial volume was specified** and then select the zones in which you wish track volumes in all wells.



Clear Initial Volumes

There are several ways to clear initial volumes that have been set:

- Select the rows, right-click, and then select **Delete Row**.
- Click **Clear Info**. The grid is cleared.

Reset Volumes

As aspirations occur, the volumes in the tubes decrease. Volumes are not automatically reset between runs. To reset volumes to the set initial volumes, click **Reset Volume**.

View Delta Volume

During or after a run, information is available in this dialog about the initial volume that was set (Initial Volume), the current volume in the well (Current Volume), and the change in volume in the well (Delta Volume).

How to Export a Sample List

1. On the **Application Run** window, click the **Sample List Export** ( ) button to display the **Export** window.
2. In the **Export** window, select a folder, name the file, and then click **Save**. The sample list is saved in the specified folder with a .TSL extension.

Modify Sample List in Microsoft® Excel®

1. After exporting the sample list, start Microsoft® Excel®.
2. Click **Open** and then select to show Files of Type: **All Files**.
3. Browse for and then select the .TSL file. Click **Open**.
4. Click **Next** (accepting the default selections) on all import wizard screens that appear and then click **Finish**.

NOTE	If additional columns appear in the sample list when it is opened in Excel, this is expected; however, DO NOT delete them.

5. Make desired changes to values and descriptions only and then save the modified Excel file by selecting **Save** from the **File** menu or by pressing **CTRL + S**. DO NOT select SAVE AS. When asked if you wish to keep the file in the current format, click **Yes**.

   When closing the file in Excel, you will be asked if you wish to save the file. Click **No**. It has already been saved in the desired format.

NOTE	Sample and Fraction Re-injection Criteria, Minimum Fraction Sites, and Initial Volumes cannot be modified in Excel.

How to Import a Sample List

1. On the **Application Run** window, select the **Sample List Import** () button to display the **Import** window.
2. On the **Import** window:
   a. Browse for and then select the sample list file.
   b. Click **Open**.

   On completion of the Import operation, the information box appears and the imported sample list opens.
3. On the information dialog box:
   a. To view the log information of the import operation, click **Details**.
   b. Click **OK**.

NOTE	Because sample lists include information about the methods and the bed layout, sample lists that do not match the application cannot be imported.

Results

During the run, the software can generate data, reports (which may include chromatogram plots of acquired traces), and log. Refer to Results on page 173 for more information.

RUNNING AN APPLICATION

The Application Run window is where you start a run and monitor the progress of a run.

While the run is in progress, it is possible to:

- modify steps that have not yet been executed, which includes modifying a method. For more information, refer to Modify a Running Method.
- use the toolbar to manipulate the appearance of the run-time graph. For more information, refer to Chromatogram Toolbar.

How to Start a Run

To get ready for and begin a run:

1. Make sure all system instruments are turned on and are ready to run (pumps are primed, column is equilibrated, samples are in place, etc.).

   NOTE **If the data instrument is a 171 or 172 Diode Array Detector, ensure that the lamp is on.**

2. Check that the correct sample list is open.
3. Click **Run** in the **Application Run** window.

During a Run

When the run starts, you may want to focus your attention on the **Application Run** window, which includes:

- Title Bar
- Application Run Toolbar
- Status Box
- Run Time
- Pause Time
- Sample List Toolbar
- Sample List Name
- Sample List
- Run Name
- Maintenance Alarm Reminder
- Method Configuration Toolbar
- Chromatogram Tab
- Chromatogram Toolbar
- Bed Layout Tab
- Mass Spec Spectra for Fractions Tab
- Action Buttons
- Info Window

Title Bar

The title bar displays the name of the running application and the user name.

Application Run Toolbar

Click an icon at the top of the Application Run window to perform the action described below.

ICON	LABEL	DESCRIPTION
	Manual Control	Opens the Manual Control window. For more information, refer to **Manual HPLC System Control on page 166**.
	Manual Advance	Available only when collecting fractions during a run. Manually diverts the flow to waste, advances the fraction collector dispense head to the next well, and then resumes collection.
	Divert Valve	Available only when collecting fractions during a run. During collection, advances the fraction collector dispense head to the next well, and diverts the flow to waste. If the fraction collector is not collecting, flow continues to be diverted to waste. The software continues to monitor and will resume collection according to the method fraction collection parameters.
	Show Graph in Cascade Mode	Available only when collecting data during a run. Creates a separate window for each data channel and cascades the windows.
	Show Graph in Tiled Mode	Available only when collecting data during a run. Creates a separate window for each data channel and cascades the windows.
	Gradient Hold	Available only during a run when a mobile phase pump is in the configuration. Allows for temporarily changing the flow rate and ramping the mobile phase composition. For more information, refer to **How to Use a Gradient Hold on page 163**.
	Solvent Settings	Available only when a mobile phase pump is in the configuration. Allows for indicating the volume of reservoir solvent. When the volume reaches 0, a notification is sent, if indicated in the Notification utility.

Status Box

When the Application Run window is open, and throughout the run, a status box is displayed. The status box displays information for the instruments in the selected configuration. The following information is displayed here, if applicable: mobile phase flow rate, composition, and pressure, detector signal, contact state, make up pump flow rate and pressure, and MS detector status.

For some detectors, the current lamp hours status is checked when starting data collection. If the lamp hours status is greater than 2000 hours, a WARNING is displayed in the status box. The WARNING displays for one minute and then when the status is refreshed, the warning is no longer displayed.

Hover the cursor over the status box to view the information in a tool tip.

Run Time

The **Run Time** field displays the time that has passed since the start of the current running method.

Run time may be paused, depending on the **Sync** task settings. For more information, refer to Sync.

Pause Time

During the run, and only while the application is paused, displays the time that has passed since the application was paused. Pause the application by doing one of the following:

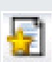
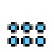
- starting a **Sync** task (paused while the software waits)
- starting a gradient hold
- clicking the **Pause** action button

  The software indicates that the application run is paused by drawing a vertical line on the chromatogram, noting an event in the log in the info window, and displaying the **Pause Time** field.

Sample List

SAMPLE LIST TOOLBAR

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Sample List Import	Not available while running. For more information, refer to **How to Import a Sample List on page 152**.
	Sample List Export	Saves the current sample list to a selected location as a .TSL file. For more information, refer to **How to Export a Sample List on page 151**.
	Initial Volume	During or after a run, opens a dialog in which information is available about the initial volume that was set (Initial Volume), the current volume in the well (Current Volume), and the change in volume in the well (Delta Volume). For more information, refer to **Set Initial Volumes on page 150**.
	Fraction Re-Injection	Allows for setting fraction re-injection criteria and for selecting the method to re-inject the fractions. To not re-inject fractions after setting criteria, clear the Auto Re-injection check box. For more information, refer to **How to Create a Sample List to Re-inject Collected Fractions on page 149**
	Fraction Counter	Allows for setting the minimum number of fraction sites required for each injection. If the specified number of fraction sites are not available on any one fraction collector prior to the injection, the application skips to the next step in your run, which prevents the sample from being lost.
	Refresh	Refreshes the sample list.

RIGHT-CLICK MENU

Select a pending (not completed or running) row and then right-click to display the following options:

MENU	DESCRIPTION
Add Sample	Adds a sample to the bottom of the sample list.
Add Multiple Samples	Adds a user-specified number of samples to the bottom of the sample list.
Insert Sample	Adds a sample between two existing samples.
Clear Sample	Clears a sample row of all values, but keeps the row in the sample list.
Delete Sample	Removes a sample from the sample list.
Paste Row Special	Pastes a user-specified number of copies of the selected sample after the selected sample row.
Open Method	Opens the method in the selected sample row in the Method Builder.
Select as Shutdown	Identifies the sample row in the sample list running an optional shutdown method. For more information, refer to **Specify a Shutdown on page 165**.

The following options are available after right-clicking on a pending sample:

OPTION	DESCRIPTION
Run	Functions as a resume or continue when a sample/step has been paused.
Skip	Select to skip the sample/step.
Pause	Select to pause the sample/step. Right-click, and then select Run to run the sample/step.

ADDITIONAL COPY/PASTE OPTIONS

The sample list control in TRILUTION LC includes options for copying and incrementing within some columns and rows similar to spreadsheet programs. Refer to the following guidelines:

Copying/Incrementing within a Column

- Only number values in number fields can be incremented. To increment the contents in a column, click in the first cell and drag down through the cells to increment. The cursor displays as a plus sign (+) briefly on the right edge of the cell when the value can be incremented.
- To copy the contents of one cell to others in the same column, click in the cell with contents to be copied and then hold CTRL and drag down through the cells to which the contents should be copied. The cursor displays as a plus sign (+) briefly on the right edge of the cell when the value can be copied.

- Select the cell to be copied and then hold **CTRL + C**; select the destination cell and then hold **CTRL + V**.
- Method Name selections cannot be copied within a column, alternatively, copy and paste the entire row.

Copying/Pasting a Row

- Select the row to be copied and then hold **CTRL + C**; select the destination row and then hold **CTRL + V**.
- Select the row to be copied and then when the cursor changes ( ), drag and drop the row at the destination.

SAMPLE LIST NAME

The **Sample List** field displays the name of the open sample list.

SAMPLE LIST

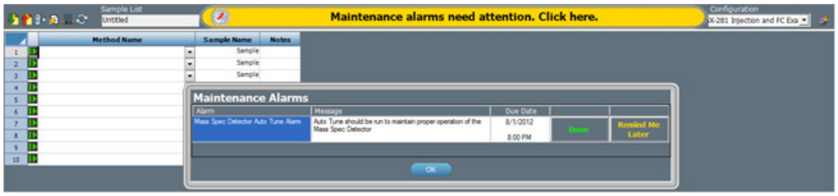
The sample list is a list of steps to execute during a run. For information about creating a sample list, refer to How to Create a Sample List.

The current running step is highlighted green in the sample list; completed steps are grayed.

Run Name

The **Run Name** field displays the name of the run.

A clock will be visible when accessing the Application Run window if an alarm is due soon. Hover the mouse over it or click to view a listing of the alarms due soon.



If an alarm is due or overdue, a yellow bar appears in the **Application Run** window informing that **"Maintenance Alarms need attention. Click here.**" Click the bar, select an alarm, and then click **Done** or **Remind Me Later**. If **Remind Me Later** was selected, the yellow bar will appear again the next day.

Method Configuration Toolbar

Not available while running.

Chromatogram Tab

The Chromatogram tab shows the run-time chromatographic plot of acquired data, gradient profile, and run-time events.

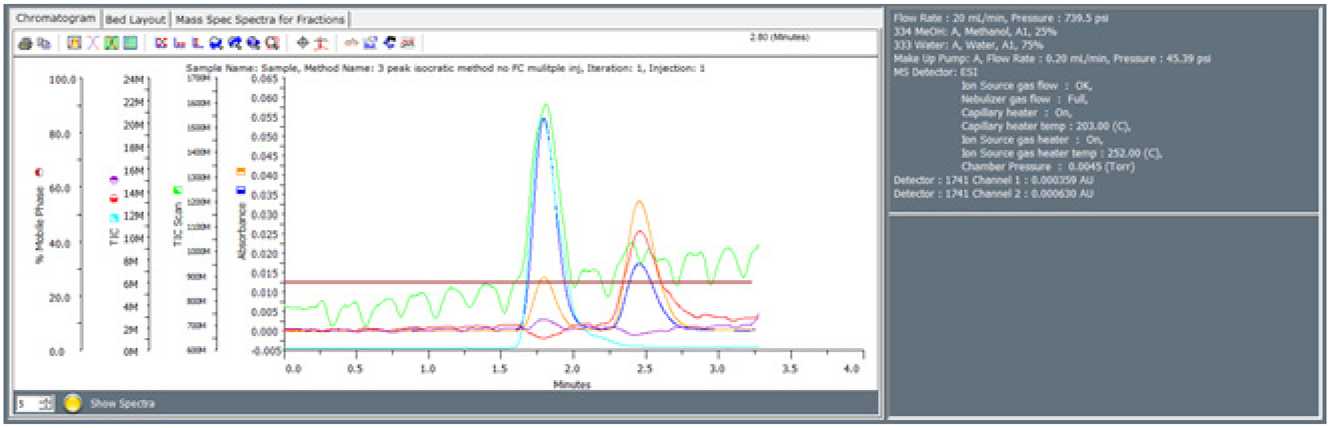
The trace begins at the data collection begin time (usually synchronized with injection).

For the gradient profile, the mobile phase composition (Y-axis—labeled % Mobile Phase) is plotted with respect to time (X-axis).

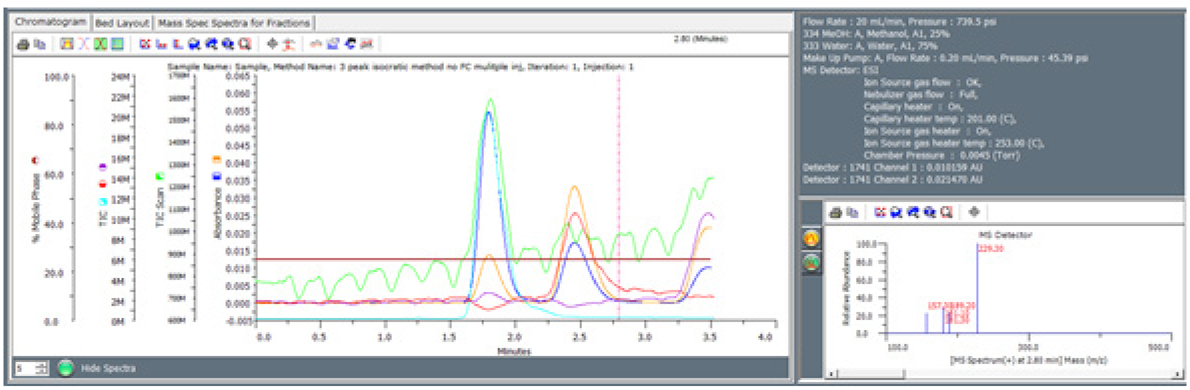
RUNNING AN APPLICATION

Viewing Real-Time Spectral Data

If a using a scan channel on the VERITY 1920 MS or a VERITY 1741 Detector running in scan mode, real-time spectral data may be viewed. Select the Show Spectra toggle.



After selecting Show Spectra, a real-time spectral data graph is displayed at right (under the status), a pink, vertical dotted line appears on the chromatogram display, and the toggle button text changes to Hide Spectra. Select Hide Spectra to hide the real-time spectral data graph.

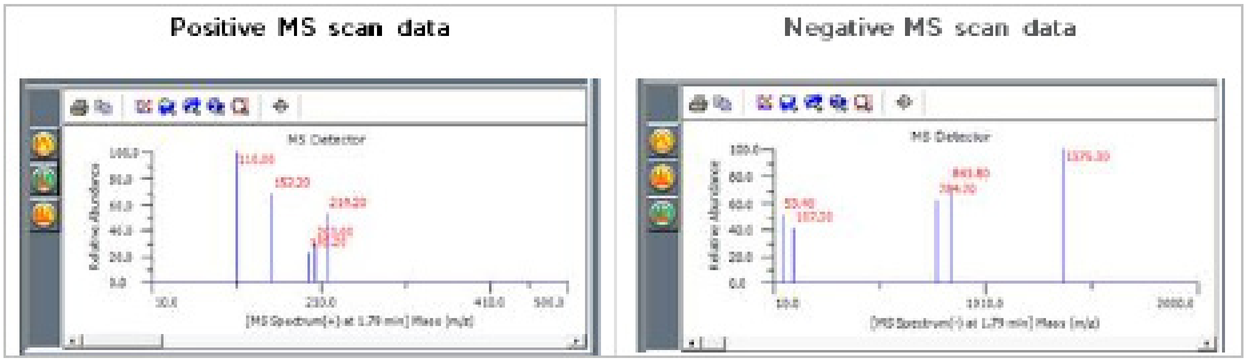


The pink line represents the point at which the real time spectra is displayed in the graph at right. To move the pink vertical line, either select the line and then drag it to a new time point (the time point is displayed in the upper right corner of the chromatogram) or double-click a different time point on the chromatogram. When the pink vertical line is moved, the real-time spectral data graph at right is updated to show the data from the selected time point.

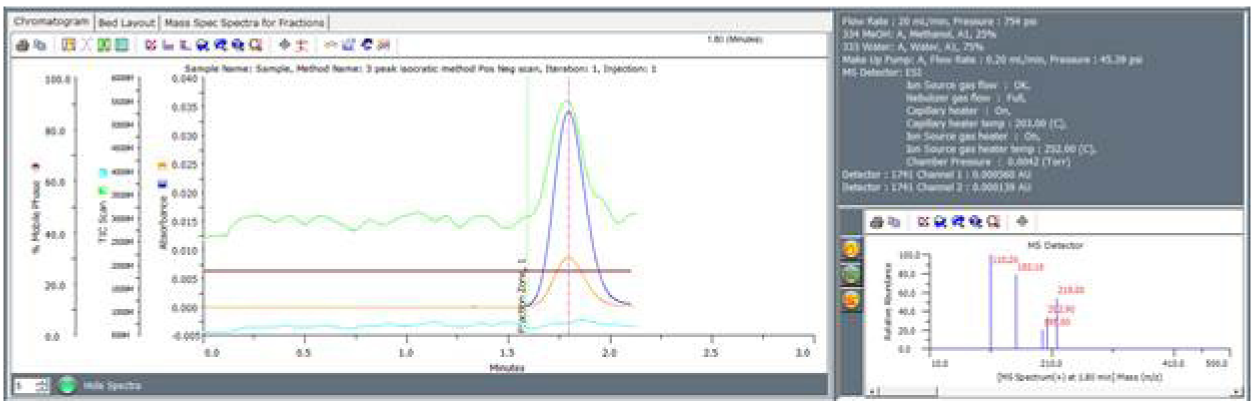
DAD spectral data button	MS spectral data button
	

If the chromatogram includes scan data for more than one channel, buttons are displayed to the left of the spectral data graph to select the channel (for example, one channel from VERITY 1741 Detector and one channel from VERITY 1920 MS). If performing positive/negative scan switching for the VERITY 1920 MS, two buttons will be available for MS spectral data, one for the positive scan data and one for the negative scan data.

The MS real-time spectral graph includes the scan data polarity (positive or negative) in the graph mass axis.



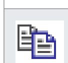
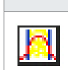
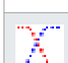
The number box to the left of the Hide Spectra toggle allows for selecting the number of masses to display on the MS real-time spectral data graph. The default is 5 masses. Changing the number of masses will update the number of masses displayed on the real time spectral data graph the next time the graph is refreshed. The number of masses selector is not available when viewing scan data from the VERITY 1741 Detector only.



By default, the full range of scan data is displayed in the real time spectral graph. For the VERITY 1741 Detector, the full scan range is always 200 – 800 nm. For the VERITY 1920 MS, the scan range depends on that set in the VERITY 1920 MS Detector Settings or VERITY 1920 MS Detector Pos Neg Settings task (default 100 – 500 m/z, full range 10 – 2000 m/z). Use the zoom tool to zoom in on the data, if desired.

Chromatogram Toolbar

The chromatogram displays the real-time run data. Click an icon to perform the action described below. All settings are temporary and revert to the **Graph Settings** on the **Method Builder-Analysis-Report Tab** at the start of each sample.

ICON	DESCRIPTION
	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Toggles between hiding and showing fraction collection start and stop lines.
	Toggles between hiding and showing actual percent mobile phase.
	Toggles between hiding and showing expected percent mobile phase.

ICON	DESCRIPTION
	Toggles showing or hiding the legend.
	Scales both axes to minimum and maximum values for the displayed traces.
	Scales the X-axis to minimum and maximum values for the displayed traces.
	Scales Y-axis to minimum and maximum values for the displayed traces.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Enlarges lassoed portion of the graph.
	Displays the time, signal level, and mobile phase composition at the intersect of the crosshair.
	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.
	Changes the color of the traces and mobile phase and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name labels and allows you to choose to show or hide the label.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Select the Move Channel tool ( ), and then right-click on a trace to display the following menu options:

MENU	DESCRIPTION
Set Offset	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the trace in either the X (Minutes) or Y (mVolts) direction.
Set mVolts Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the Y-direction.
Set All mVolts Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the Y-direction.
Set Minutes Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the X-direction.
Set All Minutes Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the X-direction.
Move in Minutes Only	Allows you to move the trace only horizontally.

MENU	DESCRIPTION
Move in mVolts Only	Allows you to move the trace only vertically.

Bed Layout Tab

When modifying a sample list, you can view the bed layout, select multiple wells, and have the software generate steps in the sample list.

1. Open the **Application Run** window.
2. Select a method containing a well variable.
3. Place the cursor in the first cell for which to select a well.
4. Click to select the **Bed Layout** tab.
5. Select a bed layout and a zone from the drop-down lists. Available wells appear in the zone's active color.
6. Choose multiple well locations as described below.

   To select random wells within one zone:

   a. Press the **CTRL** key and then select each well.

   b. Click **Add Single** and all wells selected will be added as one row in the sample list or click **Add Multiple** and each well selected will be added as its own row in the sample list.

   To select a range of wells within one zone:

   a. Lasso the range of wells.

   b. Click **Add Single** and all wells selected will be added as one row in the sample list or click **Add Multiple** and each well selected will be added as its own row in the sample list.

   NOTE Zoom, if necessary. For more information, refer to Zoom on page 729

7. Review the sample list and, if necessary, enter or change the sample description for each sample.

Mass Spec Spectra for Fractions Tab

On the **Mass Spec Spectra for Fractions** tab, the background subtracted mass spec fraction spectra is displayed as it is collected (if applicable).

Action Buttons

The following action buttons are in the lower left corner of the Application Run window.

RUNNING AN APPLICATION

ACTION BUTTON	DESCRIPTION
Run/Stop	Starts the application run and changes the button text to Stop. Click Stop to stop the run or simulation. You will be asked if you want to save data for the current sample. The mobile phase composition and flow conditions in effect at the time of termination remain in effect.
Pause/Resume	This option causes gradient progression and task execution to enter a timed hold. Mobile phase continues to flow at the composition and flow rate at the time of the pause; data collection and fraction collection continue. While paused, the Pause Time is displayed. To continue the gradient progression and task execution, click Resume. Task execution resumes from the time of the pause. The gradient progression resumes at the composition and flow rate when the run was paused. The run time extends the duration of the pause. Pause Time is no longer displayed.
Stop Pump	Not available while running.
Emergency Stop	This option stops the run and stops the flow from the mobile phase pumps.
New	Not available while running.
Open	Not available while running.
Save	Not available while running.
Save As	Not available while running.
Delete	Not available while running.

Info Window

The **Info Window** lists run-time events and the time each occurred. After the run, this information can be viewed in the log file. For more information, refer to **View the Log File on page 165**.

Interrupt a Run

Optionally, pause or terminate a run in progress.

Pause a Run

To pause a run, select **Pause**.

Gradient progression and task execution enter a timed hold. Mobile phase continues to flow at the composition and flow rate at the time of the pause; data collection and fraction collection continue. The software indicates that the application run is paused by drawing a vertical line on the chromatogram, noting an event in the log in the info window, and displaying the Pause Time field.

To continue the gradient progression and task execution, select **Resume**. Task execution resumes from the time of the pause. The gradient progression resumes at the composition and flow rate when the run was paused. The run time extends the duration of the pause. Pause Time is no longer displayed.

Stop a Run

To stop the run, select **Stop**.

You will be asked if you want to save data for the current sample.

The mobile phase composition and flow conditions in effect at the time of termination remain in effect. **Flow does not stop automatically after a run!** To stop flow from the mobile phase pumps, select **Stop Pump**.

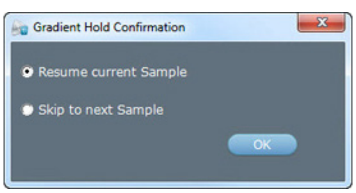
Emergency Stop

To stop the run and stop the flow from the mobile phase pumps, select **Emergency Stop**.

How to Use a Gradient Hold

Using a Gradient Hold allows for temporarily changing the flow rate and ramping the mobile phase composition.

1. Click .
2. In the **Flow Rate** box, type the desired total flow rate.
3. In the **Ramp Time** box, type how long it should take to change from pumping at the current concentrations to pumping at the concentrations listed below the **Organic Hold Time**.
4. In the **Organic Hold Time** box, type the duration for maintaining those concentrations.
5. In the **Equilibration Ramp Time** box, type how long it should take to change from pumping at the concentrations listed below the **Organic Hold Time** to pumping at the concentrations listed in the box below the **Equilibration Ramp Time** (recommend that these concentrations are the same as those used in the running method).
6. Click **OK**. The application run is paused and a vertical line (labeled **Hold Start**) is drawn on the chromatogram, an event is noted in the log, and the **Pause Time** field appears.
7. When the gradient hold ends, the application run is paused and the following occur:
   - two vertical lines (one labeled **Hold End** and one labeled **Pause**) are drawn on the chromatogram
   - an event is noted in the log
   - the **Pause Time** field appears
   - the **Gradient Hold Confirmation** dialog appears

   - Select **Resume current Sample** to continue running the sample that was in process when the gradient hold began. A vertical line (labeled **Continue**) is drawn on the chromatogram.
   - Select **Skip to next Sample** to save the data for the sample that was running when the gradient hold began, but resume running with the next sample in the sample list.
8. Click **OK**. The run resumes.

Modify a Running Method

A running method can be modified. Changes to the method will take effect on the next sample using that method.

> **NOTE**
> Variables should not be added to a running method. (There is no way to refresh the sample list while running so that they can be used.)
>
> User Units and Data Channel Name cannot be changed in a running method..

To modify a running method:

1. Select the sample row, right-click, and then select **Open Method**.
2. Modify, and then save the method.
3. Changes to the method will take effect on the next sample using that method in the sample list.
4. Close the Method Builder.

After a Run

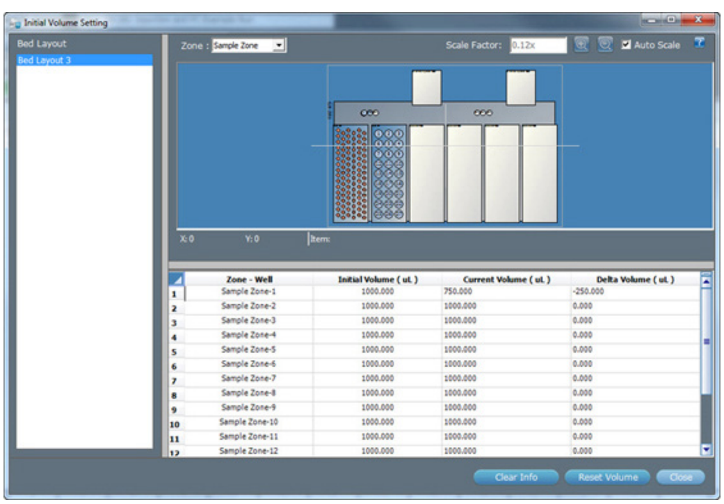
A run is complete when the software has finished all of the samples in the sample list (or after clicking **Stop** or **Emergency Stop**).

The mobile phase composition and flow conditions in effect when the run is finished remain in effect. Flow does not stop automatically after a run! To stop flow from the mobile phase pumps, click **Stop Pump**.

Data and reports can be viewed, and stored data can be re-analyzed, using the Results window; refer to Results on page 173.

If the run completes with errors, optionally check the log (refer to View the Log File) for the cause of the error.

If initial volumes were set, information about the change in volume per well can be viewed in the **Initial Volume Setting** dialog (click). Information is provided about the initial volume that was set (Initial Volume), the current volume in the well (Current Volume), and the change in volume in the well (Delta Volume).



Shut Down the HPLC System

Shutdown methods are methods that include conditions that you want in effect after each run. A shutdown method might reduce the flow rate to zero and extinguish the lamp on a detector. You create shutdown methods as you would any method.

To shut down the HPLC system automatically at the end of a run, select the shutdown method for the last sample in the sample list.

Specify a Shutdown

If a shutdown method will be used, optionally specify a step in the sample list for the shutdown and then the fractions or samples for re-injection will be inserted after all parent samples and before the shutdown (if that option is selected).

To specify a shutdown:

1. Select a method under **Method Name**.
2. Select the row.
3. Right-click, and then select **Select as Shutdown**.

There is a red border around the shutdown method step number in the sample list.

Stop Flow

Click **Stop Pump** to stop flow from the mobile phase pumps.

Log Off Automatically

To automatically end the current user's session after a successfully completed run, ensure that it has been specified in the Settings on page 26.

View the Log File

To display the log file produced during a run:

1. Access the **Results** dialog by right-clicking on an application in the **Project Library** and then selecting **Results** or by double-clicking the **Results** icon ( ).
2. Locate the run for which you want to view the log.
3. Right-click on the run and then select **View Log**. The file appears in a text editor box. Optionally, add comments, change the font, and/or print the log file. To save any changes, select **File | Save As...** (NOT Save).

MANUAL HPLC SYSTEM CONTROL

In addition to application runs, the software provides manual control over HPLC system components. Manual control is useful for starting the system, for method development, and for checking HPLC system operation before a run.

NOTE Before running your system in manual mode, be sure that instruments in the HPLC system are turned on and the appropriate connections are made as described in each user's guide.

The key concept to understand about manual control is How to Manually Send Commands or Tasks to Instruments.

Manual Control Window

Manual control () is accessed from the **Application Run** window.

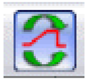
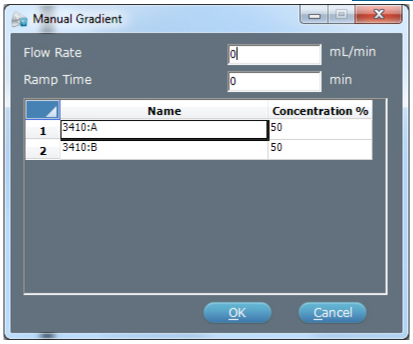
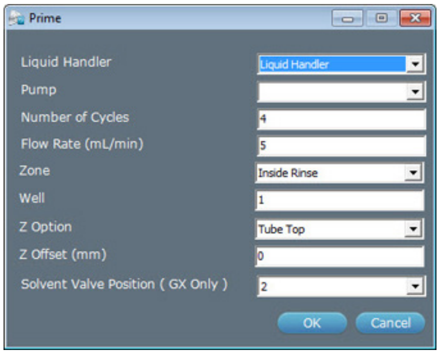
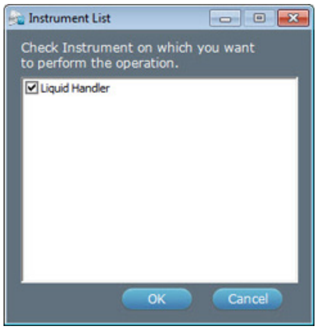
The configuration selected on the **Application Run** window will be used in **Manual Control**.

The **Manual Control** window includes:

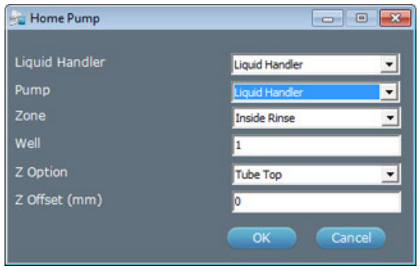
- Toolbar
- Task/Command List
- List Tab
- Chart Tab
- Auto Tune Tab
- Workspace
- Action Buttons
- Info Window

Toolbar

Click an icon at the top of the **Manual Control** window to perform the action described below.

<table>
<tr><th>ICON</th><th>LABEL</th><th>DESCRIPTION</th></tr>
<tr><td></td><td>Manual Run Gradient</td><td>Sets the values for flow rate and mobile phase composition over a specified time (Ramp Time).
Not available while an application is running.
For more information, refer to Control of Mobile Phase Pumps on page 171.

</td></tr>
<tr><td></td><td>Prime</td><td>Primes the syringe pump or solvent system.
For a syringe pump, it aspirates the syringe capacity from the reservoir and then dispenses to the specified well in the specified zone for the number of cycles.
For a solvent system, it dispenses the transfer tubing capacity from the reservoir to the specified well in the specified zone for the number of cycles.

</td></tr>
<tr><td></td><td>Home Probes</td><td>Homes the X/Y/Z on the specified liquid handler.

</td></tr>
</table>

MANUAL CONTROL WINDOW TOOLBAR CONTINUED ON PAGE 168

ICON	LABEL	DESCRIPTION
	Home Pump	Homes the solvent system or syringe pump at a specified well. 
	Auto Zero Channels	Sets the signal for all channels on the selected detector and/or 506C System Interface to 0. It is recommended to ensure a stable baseline before an auto zero of the channels. 

Executing Toolbar Functions

The toolbar provides pre-defined command run lists on click of an icon.

To execute a pre-defined command run list:

1. Click the icon.
2. Set the properties for the command, or select the instrument for which to run the pre-defined command run list, when prompted.
3. Click **OK** and the list runs.

Task/Command List

The **Task/Command** list displays sorted tasks and commands that can be added to the list for running in manual control.

One default group (Auxiliary) exists for every method. Auxiliary tasks are not specific to any instrument.

All other tasks are listed alphanumerically under the instrument name.

Commands are listed alphanumerically under the instrument type.

For descriptions of Gilson-supplied tasks, refer to List of Tasks.

For descriptions of the commands, refer to List of Commands.

List Tab

If viewing the **Chart** tab, click to return to the **List** Tab.

Chart Tab

Click to display the strip chart for one, two, or several data channels.

For more information, refer to Strip Chart Control on page 171.

Chart Toolbar

Click an icon to perform the action described below.

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copy to clipboard.	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed traces.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed traces.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed traces.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Select lasso zoom tool.	Enlarges lassoed portion of the graph.
	Select cross hair tool.	Displays the time, signal level, and mobile phase composition at the intersect of the crosshair.
	Select move channel tool.	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.
	Channel Attributes	Changes the color of the traces and mobile phase and allows you to choose to show or hide each.
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Select the **Move Channel** tool () and then right-click on a trace to display the following menu options:

MENU	DESCRIPTION
Set Offset	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the trace in either the X (Minutes) or Y (mVolts) direction.
Set mVolts Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the Y-direction.
Set All mVolts Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the Y-direction.
Set Minutes Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the X-direction.
Set All Minutes Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the X-direction.
Move in Minutes Only	Allows you to move the trace only horizontally.
Move in mVolts Only	Allows you to move the trace only vertically.

Select to display options for importing and/or viewing source or tune files and for purging vial tubing.

Import Files

Select to import supplied tune and/or source files for the VERITY 1920 MS. Select the type of file to import and then browse for the file.

Tune Files

Select to view a list of imported tune files.

Source Files

Select to view a list of imported source files.

Purge Vial Tubing

Select to access a dialog to purge the vial tubing after finishing the auto tune (recommended). Move the tubing in the vial above the liquid surface and then select **Purge**. The pressurized vial is turned on and the vial tubing is purged for five seconds.

Workspace

Build manual run lists in the workspace.

For more information, refer to How to Manually Send Commands or Tasks to Instruments on page 172.

Right-click Menu

Right-click on a task or command in the workspace to display the following menu options:

MENU	DESCRIPTION
Properties	Select to edit the properties for the task or command.
Remove	Deletes the selected command from the run list.
Copy to Task Builder	Copies the selected tasks or commands to the clipboard for pasting in the Task Builder.

Action Buttons

The following action buttons are in the lower left corner of the **Manual Control** window.

ACTION BUTTON	DESCRIPTION
Run/Stop	Executes the commands in the run list. For more information, refer to **How to Manually Send Commands or Tasks to Instruments on page 172**. To stop the run, click **Stop**. The mobile phase composition and flow conditions in effect at the time of termination remain in effect. Data collection and pumping does not stop.
Stop Pump	This option stops flow from the mobile phase pumps. It is only available until the run starts.

Info Window

The info window lists each command and the time it was executed.

Control of Mobile Phase Pumps

Values for flow rate and mobile phase composition over a specified ramp time can be set using manual control:

1. On the **Manual Control** window, click the Gradient button ().
2. In the **Flow Rate** box, type the desired flow rate.
3. In the **Ramp Time** box, type the ramp time over which to achieve the desired conditions.
4. For each pump, type the desired percent composition from that pump in the **Concentration %** field.
5. After specifying all parameters, click **OK**.

Strip Chart Control

The **Chart** tab in the **Manual Control** window allows for starting and stopping data collection and viewing a strip chart for one, two, or several data channels.

1. Select the **Chart** tab on the **Manual Control** window.
2. Select **Start Data Collection** to begin viewing data from all UV/VIS channels or select **Start Mass Spec Scan** to begin viewing data from the MS detector. The traces for the channel(s) appear in the window.

3. Data collection continues until you click **Stop Data Collection** or **Stop Mass Spec Scan**. When data collection is halted, a dialog box appears that enables you to save the collected data.

   If you select to save the strip chart, it is stored with other run results. (Refer to Results.) The software indicates in the Info Window that the result is a manual result (Manual Result: Yes).

How to Manually Send Commands or Tasks to Instruments

During manual control, you can send instructions to the instruments in the selected configuration.

To issue a command or task to one of these instruments:

1. From the **Task/Command** List, drag and then drop a command or task into the workspace. After adding a custom task to the workspace, you will be asked if you want to update the task defaults. Click **Yes** and the values specified for the parameters will be remembered the next time this task is used. Click **No** and property changes will only affect the current manual control session.

   For a description of the commands, refer to List of Commands on page 647.

   For a description of the tasks, refer to List of Tasks on page 232.
2. Set the properties.
3. Continue adding commands or tasks, or click **Run**.

Reorder Commands or Tasks

To change the order in which commands or tasks are executed, select the command or task and then click the up ( ) or down ( ) arrow.

To change which commands or tasks are executed, select or clear the check box next to the command or task name in the run list.

Remove Commands or Tasks

To remove commands or tasks:

1. Select the command or task in the workspace.
2. Right-click, and then select **Remove** or press the **DELETE** key.

Data Storage

During a manual run, the software can generate data. Refer to Results for more information.

RESULTS

The **Run Results** window enables viewing chromatogram plots and analysis information for collected data.

From a run, the software produces Results containing the channel data collected and stored for all injected samples. Results contain time and signal information for each sample.

To view results of data analysis, open the analysis report.

Right-click on an application in the **Project Library** and then select **Results** or double-click the results icon (R) to display the Results window.

Key concepts to understand about results are:

- How to View Results on page 176
- How to Export Results
- How to Archive Results
- How to Restore Results
- How to View Spectral Data
- How to View Run Results
- How to Analyze Data in a Different Way

Results Window

The **Results** window displays all runs for the application. The exception is when runs have been archived, in which case they must be restored to be viewed.

The **Results** window includes:

- Results Tab
- Summary Tab
- Calibration Tab
- Tune/Diagnostics Tab
- Toolbar
- Action Buttons (Results Window)

NOTE	To sort the run results, click on a column header. To sort in reverse order, click the column header again.

Results Tab

Double-click the run name to show the run results. For more information, refer to How to View Results on page 176.

RESULTS

Right-click Menu

Select a run, and then right-click for the following options:

MENU	DESCRIPTION
Open Result	Displays stored collected data. Information for all samples injected during the run is stored here.
Rename Run	Allows for assigning a different name to a run.
Export	Copies the run (data and method) to a specified external location (i.e., network drive) as a Result Export File (.LCRA). For more information, refer to **How to Export Results on page 177**.
Archive	Moves the run (data and method) to a specified external location (i.e., network drive) as a Result Export File (.LCRA). The difference between Export and Archive is that Export leaves data in the Results dialog, whereas Archive removes it. Both allow the data to be restored. For more information, refer to How to Archive Run Results.
Delete	Permanently deletes the run data.
View Log	Opens the log file, which is detailed information obtained during the run and shown in the info window, in Microsoft® Notepad.
View Diagnostics	Opens a dialog for selecting a sample for which to view the diagnostics for the Flexar SQ 300 MS Detector as recorded at the beginning of each sample in the application run.
Extract Methods	Displays the methods (and any error methods) used to generate the results in an Extract Methods dialog. Optionally, select methods to import (by default, all are selected), and then click OK. Extracted methods import into the application in which they were run.
Export MS Spectra	Select to choose a folder to which MS data will export in mzXML format. Enable this option using the Administrative Tools | Settings option. The option is not displayed if the result does not include MS Spectral data

Summary Tab

Select the type of summary to view: **Standard** or **Unknown**.

Double-click the run name (channel) to open the **Summary Report**.

Calibration Tab

Double-click the run name (channel) to show the calibration plot, which is used to calculate amounts for unknown samples. Examine the calibration curve generated for each standard peak. Viewing calibration plots is especially important if quadratic or cubic was the curve fitting method used to generate them.

For more information, refer to How to View Calibrations.

Tune/Diagnostics Tab

Double-click the type of log to view (**Auto Tune** or **Check Tune**) or a **Diagnostics** report.

Right-click Menu

Select a log or Diagnostics, and then right-click for the following options:

MENU	DESCRIPTION
Archive	Moves the log to a specified external location (i.e., network drive) as a Diagnostic Export File (.LCDT). The difference between Export and Archive is that Export leaves the log in the dialog, whereas Archive removes it. Both allow the log to be restored.

CONTINUED ON PAGE 175

MENU	DESCRIPTION
Delete	Permanently deletes the log.
Export	Copies the log to a specified external location (i.e., network drive) as a Diagnostic Export File (.LCDT).
Import	Imports a .LCDT file.
View	Opens the log file, which is detailed information obtained during the run and shown in the info window, in Microsoft® Notepad. Also provides options for viewing tune results or diagnostics for the Flexar SQ 300 MS Detector.

View Auto Tune

Provides options for viewing, saving or printing an **Auto Tune Log** and/or **Check Tune Results**. Saved logs and results are saved to a user-specified location as .HTML files.

Auto Tune Log

Displays the log that was generated during the auto tune/check tune.

Check Tune Results

Displays the results of the check tune that was run automatically after the auto tune.

If any failures for Mass or Width are indicated, first verify the following and then auto tune again:

- Was the correct tune mix source selected and is there enough tune mix available?
- Are the lines primed?
- Are there any leaks in the fittings for the tune mix or nitrogen supply connections?
- Is the dry gas flow at 8000 mL/min? Is the dry gas temperature at 300°C? Is the nebulizer gas pressure at 80 psi? (Run the diagnostics or check the status box in the **Application Run** window.)

View Check Tune

Provides options for viewing, saving or printing a **Check Tune Log** and/or **Check Tune Results**. Saved logs and results are saved to a user-specified location as .HTML files.

Check Tune Log

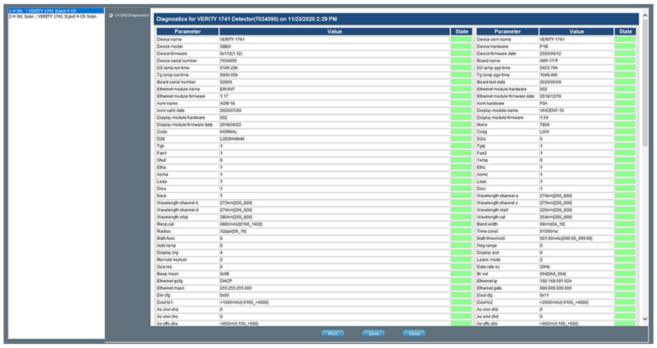
Displays the log that was generated during the check tune.

Check Tune Results

Displays the results of the check tune. If any failures for Mass or Width are indicated, run an auto tune.

View Diagnostics

Provides options for viewing, saving, or printing a diagnostics report. Saved diagnostic reports are saved to a user-specified location as .HTML files.



Toolbar

Click an icon to perform the action described below.

ICON	DESCRIPTION
	Lists run results based on the filter selected. When filtering by peak names, separate multiple peak names by % and list them in the order that they elute from the column.
	Copies the run (data and methods) to a specified external location (i.e., network drive) as a Result Export File (.LCRA). For more information, refer to **How to Export Results on page 177**.
	Moves the run (data and methods) to a specified external location (i.e., network drive) as a Result Export File (.LCRA).. The difference between Export and Archive is that Export leaves data in the Results dialog, whereas Archive removes it. Both allow the data to be restored. For more information, refer to How to Archive Results.
	Imports a Results Export File (.LCRA) and lists the run results in the Results window. For more information, refer to How to Restore Results.

Action Buttons

The following action buttons are in the lower right corner of the **Results** window.

ACTION BUTTON	DESCRIPTION
Refresh	Reloads the window with any new or imported run results.
Close	Exits the Results window.

How to View Results

To view results:

1. Right-click on an application in the **Project Library** and then select **Results** or double-click the results icon ( ) to display the **Results** window.
2. Double-click the run name to display the result in the **Run Results** window.

For information about how to view the run results in the **Run Results** window, refer to **How to View Run Results on page 211**.

How to Export Results

1. On the **Results** window, select the run name, and then do either of the following:
   - Right-click and then select **Export**.
   - Click .
2. Select a folder and then click **OK**. On completion of the export operation, the run results and the embedded methods and tasks and diagnostics, but not sample list are saved in the specified folder with a .LCRA extension.
3. When the export success/fail dialog appears:
   - Click **Details** to view the log information of the export operation.
   - Click **OK**.

How to Archive Results

Archive run data before deleting applications.

1. On the **Results** window, select the run name, and then do either of the following:
   a. Select .
   b. Right-click, and then select **Archive**.

   NOTE The difference between export and archive is that export leaves data in the Results window, whereas archive removes it. Both allow the data to be restored.

2. Select a folder, and then click **OK**. On completion of the archive operation, the run results and the embedded methods and tasks and diagnostics (if applicable), but not sample list, are moved to the specified folder with a .LCRA extension.
3. When the archive success/fail dialog appears:
   - Click **Details** to view the log information of the archive operation.
   - Click **OK**.

How to Restore Results

Restore runs that have been exported or archived.

1. On the **Results** window, click to display the Import window.
2. From the **Import** window:
   a. Browse for and select one or more **Result Export Files** (.LCRA).
   b. Click **Open**.
3. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import (restore) operation.
   - Click **OK**.

NOTE Methods are not automatically imported or restored with results. To access the methods, right-click on the run name in the Results window and then select Extract Methods. For more information, refer to Results Tab.

How to Delete Results

Run data can be permanently deleted.

1. On the **Results** window, select the run name, right-click, and then select **Delete**.
2. On the **Delete confirmation** box, click **Yes**. The run data is permanently deleted.

Run Results Window

The **Run Results** window enables viewing chromatogram plots and analysis information for collected data. To view results of data analysis, view the analysis report. For more information, refer to How to View Results on page 176.

The **Run Results** window includes:

- Access to Spectral Data (if applicable)
- Chromatogram
- Sample Bed Layout
- Fraction Bed Layout
- Mass Spec Spectra for Fractions (if applicable)
- Action Buttons (Run Results Window)
- Info Window

Spectral Data

Click Spectral Data in the Run Results window to view chromatogram and spectral plots for one sample and create spectral libraries using data collected by the 171 or 172 Diode Array Detector, refer to Spectral Data Tab (DAD), Peak Purity Tab, and Library Tab (DAD), or the Flexar SQ 300 MS Detector (if spectra were saved), refer to Spectral Data Tab (MS) on page 185 and Library Tab (MS).

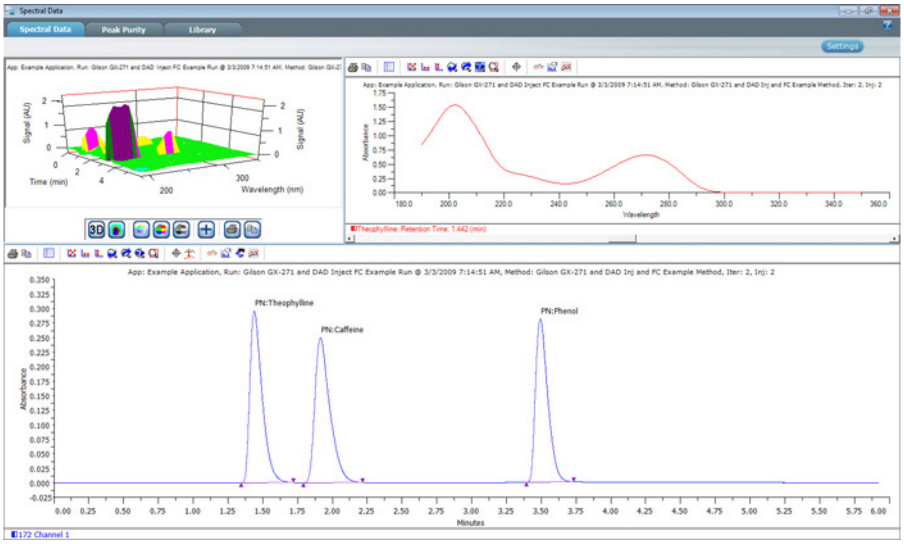
To view the spectral data for another sample:

1. Close the **Spectral Data** window by clicking [X] in the upper right corner. The **Run Results** window appears.
2. On the **Run Results** window:

   a. Select a different sample from the **Samples** drop-down list.
   b. Select the data channel from the **Device/Channel** drop-down list and the analysis from the **Analysis** drop-down menu.

3. Click the **Spectral Data** button to view the chromatogram and spectral plots for the selected sample.
4. Repeat for any other samples.

Spectral Data Tab (DAD)



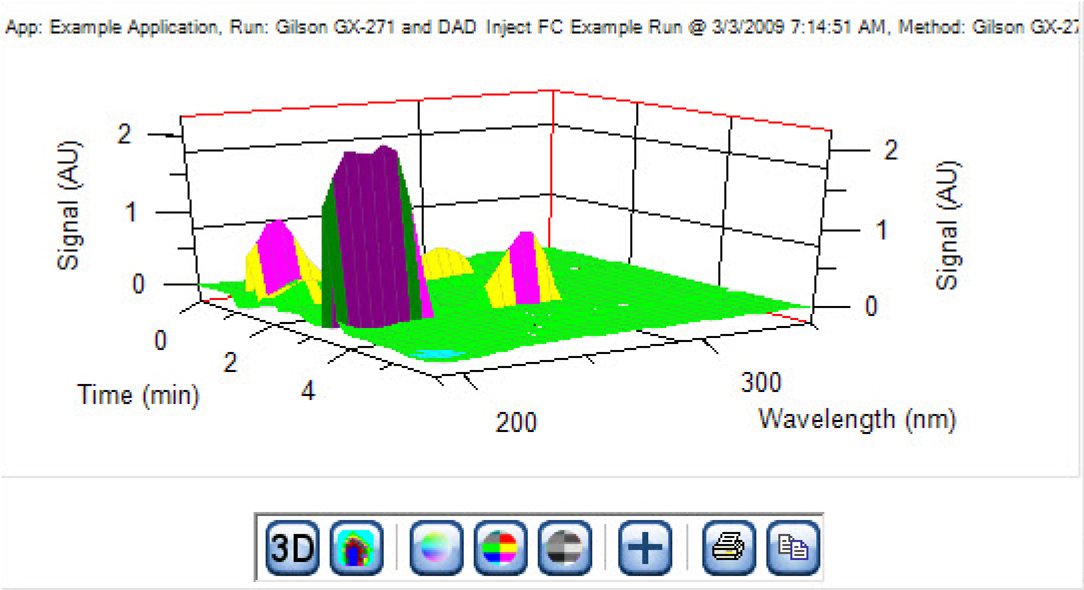
Use the **Spectral Data** tab to view diode array data.

By default, a 3D plot of the spectral data set, a spectrum plot of the first named peak (in the peak table) or the first integrated peak found (if no peaks were named in the peak table) at the APEX, and the chromatogram are displayed.

The Spectral Data Tab (DAD) includes:

- Spectral Data Tab (DAD) - 3D Plot/Isoelectric Plot
- Spectral Data Tab (DAD) - Chromatogram
- Spectral Data Tab (DAD) - Spectrum Plot

SPECTRAL DATA TAB (DAD) - 3D PLOT/ISO-ELECTRIC PLOT



Zoom (3D Plot)

To zoom toward the center of the plot, right-click while dragging the mouse downward.

To zoom away from the center of the plot, right-click while dragging the mouse upward.

Zoom (Iso-electric Plot)]

To zoom in, right-click on the plot.

To zoom out, right-click outside the plot on either axis.

Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Show 3D plot	Displays the 3D plot.
	Show iso-electric plot	Displays the iso-electric plot.
	Show continuous	Displays the plot using a continuous color scheme, which provides the best on-screen display.
	Show stepped intervals	Displays the plot using a stepped interval color scheme, which redraws quickest.
	Show grayscale	Displays the plot using a grayscale color scheme, which shows how a black and white printout of the plot would look.
	Select crosshair tool	Displays the Time, Wavelength, and Absorbance at the intersect of the crosshair when the iso-electric plot is displayed. Click on the iso-electric plot to update the wavelength on the chromatogram and the retention time on the spectrum.
	Print	Displays the print dialog for printing the plot as it is currently viewed on-screen.
	Copy to clipboard	Copies the plot, as it is currently viewed on-screen, to the clipboard.

Right-click Menu

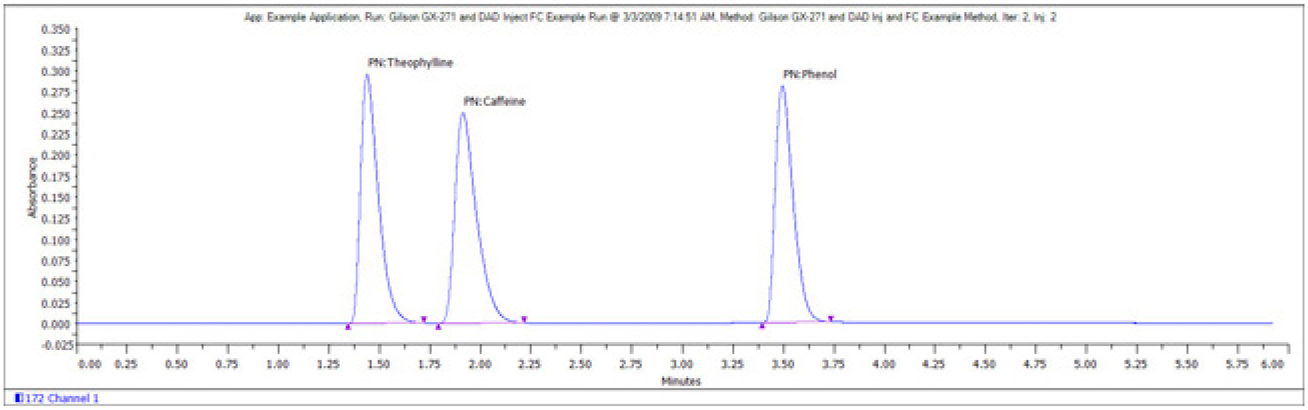
Right-click next to the toolbar then select Control Panel to access the following options for the 3D plot:

OPTION	DESCRIPTION
Elevation Angle	The default is 20.0 degrees. This parameter modifies the angle of the Z axis in relation to the X axis. Setting a smaller number causes the 3D view to tilt away from you. Setting a larger number causes the 3D view to tilt towards you.
Azimuth Angle	The default is -34.5 degrees. Setting a larger angle causes the traces to become more stacked. Setting a smaller angle causes the traces to appear farther apart.
View Radius	The default is 5.0; the valid range for this parameter is 1 to 10. Setting a smaller radius makes the plot larger. Setting a larger radius makes the plot smaller. View Radius is calculated as follows: Wavelength x Time x AU

RIGHT-CLICK MENU CONTINUED ON PAGE 181

OPTION	DESCRIPTION
Angular Width	The default is 50 degrees. Setting a larger width makes the plot smaller. Setting a smaller width makes the plot larger.
Defaults	Click to return the options to their default settings.
Apply	Click to accept the selected options and apply them to the plot.
Legend	Identifies the absorbance range associated with each color or pattern.

SPECTRAL DATA TAB (DAD) - CHROMATOGRAM



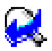
Shows the chromatogram plot for the selected data channel and analysis. Optionally shows an overlaid data trace at a user-selected wavelength (using the cross hair tool on the iso-electric plot or **Settings** button).

Settings

Click the **Settings** button and then modify any or all of the parameters. After clicking **OK**, the chromatogram shows an overlaid data trace to reflect those settings.

Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copy to clipboard.	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed traces.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed traces.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed traces.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).

TOOLBAR CONTINUED ON PAGE 182

ICON	LABEL	DESCRIPTION
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Select lasso zoom tool.	Enlarges lassoed portion of the graph.
	Select cross hair tool.	Displays the minutes and absorbance at the intersect of the crosshair.
	Select move channel tool.	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.
	Channel Attributes.	Changes the color of the trace allows you to choose to show or hide.
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.
	Peak Label Attributes.	Changes the orientation and color of the peak name labels and allows you to choose to show or hide the labels.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Right-click on the chromatogram to access the following options:

OPTION	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the minutes and absorbance at the intersect of the crosshair.
Move channel	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.

Select the **Move Channel** tool ( ) and then right-click on a trace to display the following menu options:

MENU	DESCRIPTION
Set Offset	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the trace in either the X (Minutes) or Y (mVolts) direction.
Set mVolts Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the Y-direction.
Set All mVolts Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the Y-direction.
Set Minutes Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the X-direction.
Set All Minutes Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the X-direction.

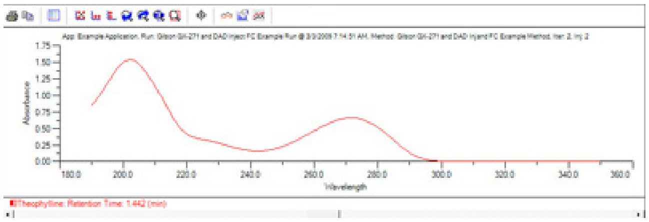
MENU	DESCRIPTION
Move in Minutes Only	Allows you to move the trace only horizontally.
Move in mVolts Only	Allows you to move the trace only vertically.

SPECTRAL DATA TAB (DAD) - SPECTRUM PLOT

Displays the spectrum at the APEX for the first named peak (in the peak table) or the first integrated peak found (if no peaks were named in the peak table).

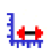
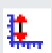
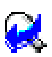
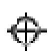
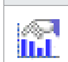
How to Display and Manipulate the Spectrum Plot

To display a spectrum at the APEX for a peak other than the first one found, double-click in the peak on the chromatogram.



Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the spectrum as it is currently viewed on-screen.
	Copy to clipboard.	Copies the spectrum, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed spectrum.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed spectrum.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed spectrum.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the spectrum as it is viewed on-screen.
	Select lasso zoom tool.	Enlarges lassoed portion of the spectrum.
	Select cross hair tool.	Displays the Wavelength and Absorbance at the intersect of the crosshair.
	Channel Attributes.	Changes the color of the spectrum and the raw data and allows you to choose to show or hide each.
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.

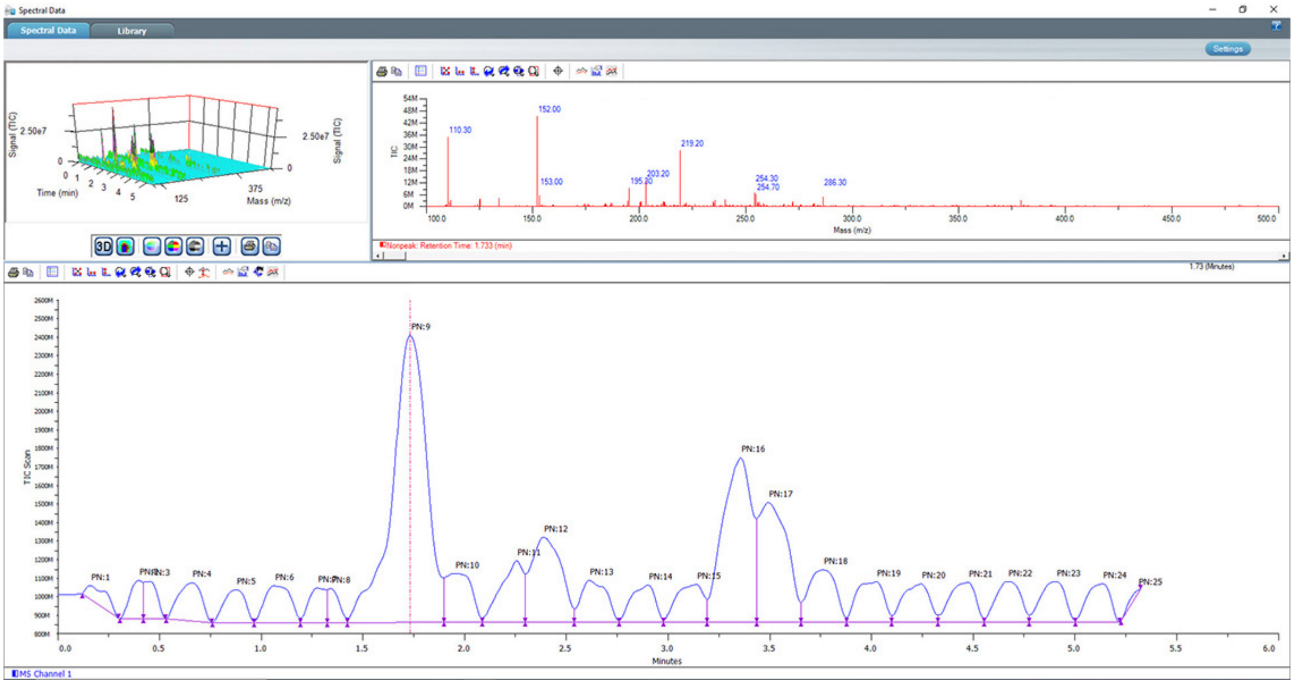
ICON	LABEL	DESCRIPTION
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Right-click on the spectrum plot to access the following options:

OPTION	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the spectrum as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the Wavelength and Absorbance at the intersect of the crosshair.

Spectral Data Tab (MS)



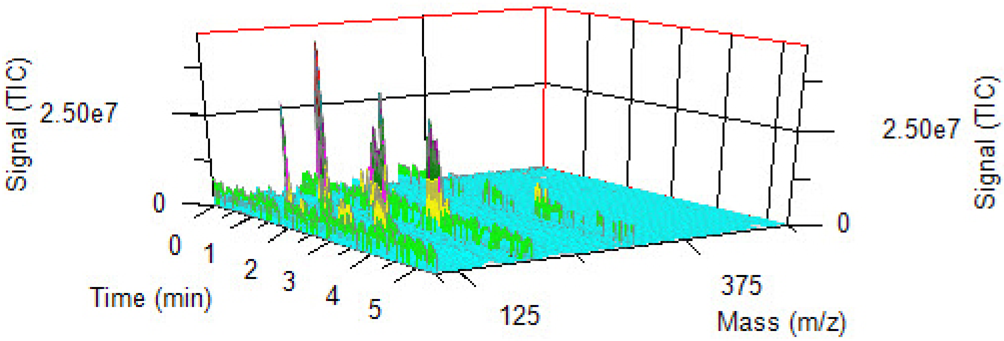
Use the **Spectral Data** tab to view mass spectral data.

By default, a 3D plot of the spectral data set, a spectrum plot of the first named peak (in the peak table) or the first integrated peak found (if no peaks were named in the peak table) at the APEX, and the chromatogram are displayed.

The Spectral Data Tab (MS) includes:

- Spectral Data Tab (MS) - 3D/Isoelectric Plot
- Spectral Data Tab (MS) - Chromatogram
- Spectral Data Tab (MS) - Spectrum Plot

SPECTRAL DATA TAB (MS) - 3D PLOT/ISO-ELECTRIC PLOT



Zoom (3D Plot)

To zoom toward the center of the plot, right-click while dragging the mouse downward.

To zoom away from the center of the plot, right-click while dragging the mouse upward.

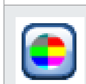
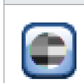
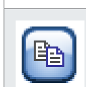
Zoom (Iso-electric Plot)]

To zoom in, right-click on the plot.

To zoom out, right-click outside the plot on either axis.

Toolbar

Click an icon to perform the action described below:

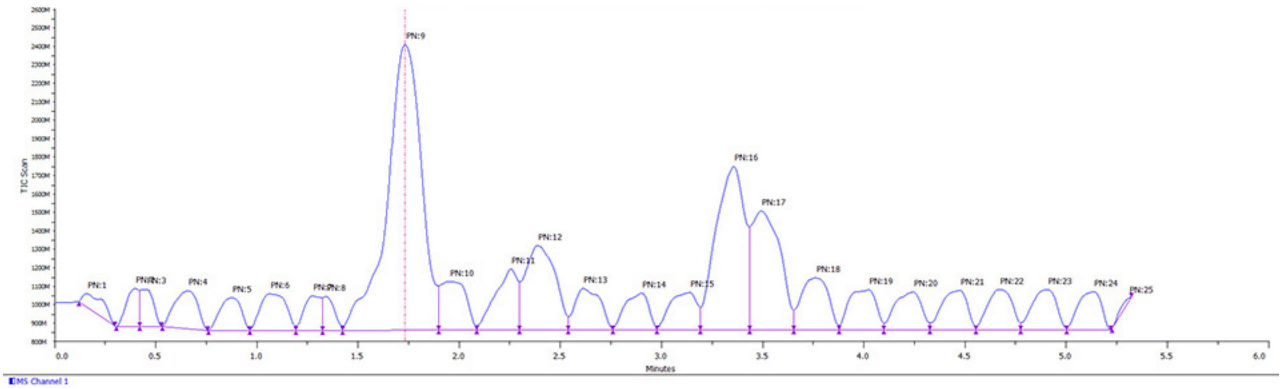
ICON	DESCRIPTION
	Displays the 3D plot.
	Displays the iso-electric plot.
	Displays the plot using a continuous color scheme, which provides the best on-screen display.
	Displays the plot using a stepped interval color scheme, which redraws quickest.
	Displays the plot using a grayscale color scheme, which shows how a black and white printout of the plot would look.
	Displays the Time, Mass, and Signal at the intersect of the crosshair when the iso-electric plot is displayed. Click on the iso-electric plot to update the mass on the chromatogram and the retention time on the spectrum.
	Displays the print dialog for printing the plot as it is currently viewed on-screen.
	Copies the plot, as it is currently viewed on-screen, to the clipboard.

Right-click Menu

Right-click next to the toolbar then select **Control Panel** to access the following options for the 3D plot:

OPTION	DESCRIPTION
Elevation Angle	This parameter modifies the angle of the Z axis in relation to the X axis. Setting a smaller number causes the 3D view to tilt away from you. Setting a larger number causes the 3D view to tilt towards you.
Azimuth Angle	Setting a larger angle causes the traces to become more stacked. Setting a smaller angle causes the traces to appear farther apart.
View Radius	The valid range for this parameter is 1 to 10. Setting a smaller radius makes the plot larger. Setting a larger radius makes the plot smaller. View Radius is calculated as follows: Mass x Time x Signal
Angular Width	Setting a larger width makes the plot smaller. Setting a smaller width makes the plot larger.
Defaults	Click to return the options to their default settings.
Apply	Click to accept the selected options and apply them to the plot.
Legend	Identifies the total ion count associated with each color or pattern.

SPECTRAL DATA TAB (MS) - CHROMATOGRAM



Shows the chromatogram plot for the selected data channel and analysis.

A pink, vertical dotted line appears on the chromatogram display. The MS spectra for that retention time is displayed in the spectrum plot in the upper right corner of the screen. To move the pink vertical line, either select the line and then drag it to a new time point or double-click a different time point on the chromatogram. When the pink vertical line is moved, the spectrum plot is updated to show the MS spectra for the selected retention time.

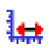
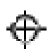
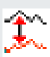
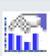
Optionally shows an overlaid data trace at a user-selected mass (using the cross hair tool on the iso-electric plot or Settings button). Optionally, hide the selected data channel for better viewing of the overlaid data trace.

Settings

Click the **Settings** button and then enter a mass (m/z). After clicking **OK**, the chromatogram shows an overlaid data trace for that mass.

Toolbar

Click an icon to perform the action described below:

ICON	DESCRIPTION
	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Toggles showing or hiding the legend.
	Scales both axes to minimum and maximum values for the displayed traces.
	Scales the X-axis to minimum and maximum values for the displayed traces.
	Scales Y-axis to minimum and maximum values for the displayed traces.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Enlarges lassoed portion of the graph.
	Displays the minutes and signal at the intersect of the crosshair.
	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.
	Changes the color of the trace allows you to choose to show or hide.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name labels and allows you to choose to show or hide the labels.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

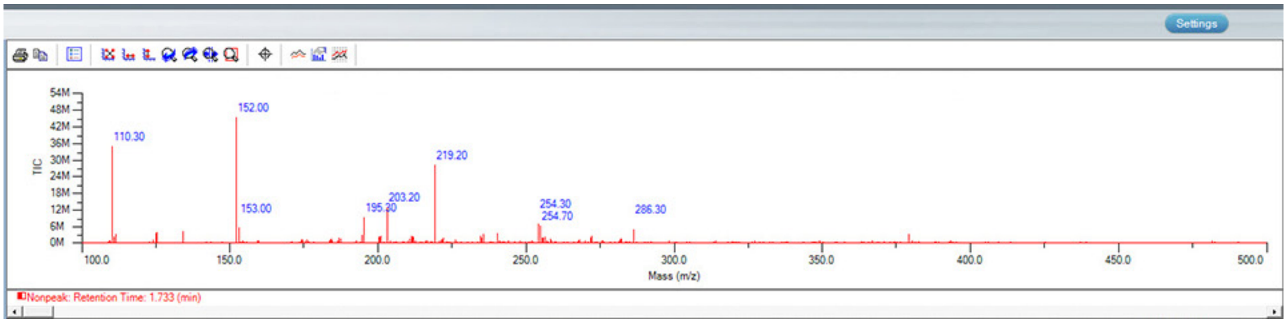
Right-click on the chromatogram to access the following options:

OPTION	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the minutes and signal at the intersect of the crosshair.
Move channel	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.

Select the **Move Channel** tool ( ) and then right-click on a trace to display the following menu options:

MENU	DESCRIPTION
Set Offset	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the trace in either the X (Minutes) or Y (mVolts) direction.
Set TIC Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the Y-direction.
Set All TIC Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the Y-direction.
Set Minutes Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the X-direction.
Set All Minutes Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the X-direction.
Move in Minutes Only	Allows you to move the trace only horizontally.
Move in TIC Only	Allows you to move the trace only vertically.

SPECTRAL DATA TAB (MS) - SPECTRUM PLOT

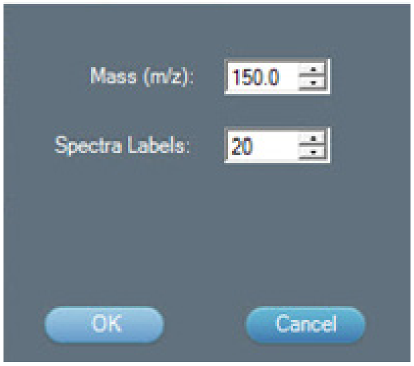


Displays the spectrum at the APEX for the first named peak (in the peak table) or the first integrated peak found (if no peaks were named in the peak table). MS spectra is displayed as centroid data with masses labelled.

Settings

Select the Settings button to specify how many masses to label. By default, 20 masses are labeled.

Chromatogram Settings

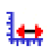
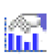


How to Display and Manipulate the Spectrum Plot

To display a spectrum at the APEX for a peak other than the first one found, double-click in the peak on the chromatogram.

Toolbar

Click an icon to perform the action described below:

ICON	DESCRIPTION
	Displays the print dialog for printing the spectrum as it is currently viewed on-screen.
	Copies the spectrum, as it is currently viewed on-screen, to the clipboard.
	Toggles showing or hiding the legend.
	Scales both axes to minimum and maximum values for the displayed spectrum.
	Scales the X-axis to minimum and maximum values for the displayed spectrum.
	Scales Y-axis to minimum and maximum values for the displayed spectrum.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Zooms in on a point and centers it in the spectrum as it is viewed on-screen.
	Enlarges lassoed portion of the spectrum.
	Displays the Minutes and Total Ion Count at the intersect of the crosshair.
	Changes the color of the spectrum and the raw data and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Right-click on the spectrum plot to access the following options:

OPTION	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the spectrum as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the Mass and Total Ion Count at the intersect of the crosshair.

Peak Purity Tab

Use the **Peak Purity** tab to compare the apex spectrum to spectra across the peak to check the purity of the peak. Peak Purity options are set in the **Method Builder - Analysis - Peak Integration** tab.

By default, the chromatogram, the sampled spectra for the first peak found, and a similarity curve are displayed.

The Peak Purity Tab includes:

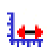
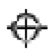
- Peak Purity Tab - Chromatogram
- Peak Purity Tab - Sampled Spectra Plot
- Peak Purity Tab - Similarity Curve Plot

PEAK PURITY TAB - CHROMATOGRAM

Shows the chromatogram plot for the selected data channel and analysis and displays the peak purity value for each of the integrated peaks. Peak Purity values are preceded by PP:. If TRILUTION LC calculates a peak purity that is below the Purity Threshold value set in the Peak Purity options in the Method, the peak is filled red. If the calculated peak purity is above the Purity Threshold value, the peak is filled green.

Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copy to clipboard.	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed traces.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed traces.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed traces.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Select lasso zoom tool.	Enlarges lassoed portion of the graph.
	Select cross hair tool.	Displays the minutes and absorbance at the intersect of the crosshair.

ICON	LABEL	DESCRIPTION
	Select move channel tool.	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.
	Channel Attributes.	Changes the color of the trace allows you to choose to show or hide.
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.
	Peak Label Attributes.	Changes the orientation and color of the peak name labels and allows you to choose to show or hide the labels.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Right-click on the chromatogram to access the following options:

OPTION	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the minutes and absorbance at the intersect of the crosshair.
Move channel	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms because you can adjust for varying retention times by aligning peaks in the chromatogram.

Select the Move Channel tool ( ) and then right-click on a trace to display the following menu options:

MENU	DESCRIPTION
Set Offset	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the trace in either the X (Minutes) or Y (mVolts) direction.
Set mVolts Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the Y-direction.
Set All mVolts Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the Y-direction.
Set Minutes Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the X-direction.
Set All Minutes Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the X-direction.
Move in Minutes Only	Allows you to move the trace only horizontally.
Move in mVolts Only	Allows you to move the trace only vertically.

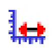
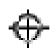
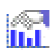
PEAK PURITY TAB - SAMPLED SPECTRA PLOT

Displays the sampled spectra for the first peak found.

To display spectra for a peak other than the first one found, double-click in the peak on the chromatogram.

Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the spectrum as it is currently viewed on-screen.
	Copy to clipboard.	Copies the spectrum, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed spectrum.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed spectrum.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed spectrum.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the spectrum as it is viewed on-screen.
	Select lasso zoom tool.	Enlarges lassoed portion of the spectrum.
	Select cross hair tool.	Displays the Wavelength and Absorbance at the intersect of the crosshair.
	Channel Attributes.	Changes the color of the spectrum and the raw data and allows you to choose to show or hide each.
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Right-click on the spectrum plot to access the following options:

OPTION	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the spectrum as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the Wavelength and Absorbance at the intersect of the crosshair.

PEAK PURITY TAB - SIMILARITY CURVE PLOT

The similarity curve is a representation of individual purity calculations during elution. The number of points on the curve are the **Number of Sampled Spectra** selected in the **Peak Purity** options in the method.

Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the spectrum as it is currently viewed on-screen.
	Copy to clipboard.	Copies the spectrum, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Select cross hair tool.	Displays the Wavelength and Absorbance at the intersect of the crosshair.
	Channel Attributes.	Changes the color of the spectrum and the raw data and allows you to choose to show or hide each.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Right-click Menu

Right-click on the similarity curve plot to access the following options:

OPTION	DESCRIPTION
Cross hairs	Displays the Wavelength and Absorbance at the intersect of the crosshair.

Library Tab

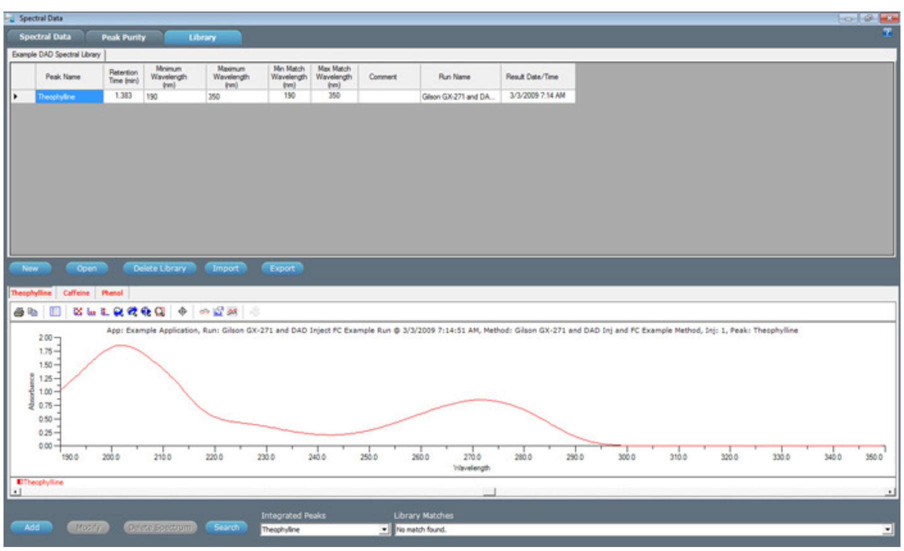
In TRILUTION LC, you can assemble reference databases of spectra of known compounds. You can then search and match the database contents to the chromatogram for an unknown sample and report the outcome.

You can perform spectral matching at run time or during post-run re-analysis.

For information about diode array spectral libraries, refer to Library Tab (DAD).

For information about mass spectral libraries, refer to Library Tab (MS).

Library Tab (DAD)



In TRILUTION LC, you can assemble reference databases of spectra of known compounds. You can then search and match the database contents to the chromatogram for an unknown sample and report the outcome.

You can perform spectral matching at run time or during post-run re-analysis.

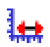
ACTION BUTTONS

The following action buttons are located on the Library tab.

ACTION BUTTON	DESCRIPTION
New	Creates a new library. For more information, refer to Build a DAD Spectral Library.
Open	Opens an existing library.
Delete Library	Opens the Delete Spectral Library dialog for selecting libraries to delete.
Import	Imports a .LCSL file.
Export	Exports the Spectral Library to a specified location as a .LCSL file.
Add	Opens the Add Spectral Library Entry dialog for adding a peak spectrum to one or more spectral libraries. For more information, refer to Build a DAD Spectral Library.
Modify	Opens the Modify Spectral Library Entry dialog for modifying the comparison wavelength range or comment for an existing spectrum or for adding an existing spectrum to additional libraries. For more information, refer to Modify a DAD Spectral Library Entry.
Delete Spectrum	Opens the Select Spectral Library dialog for selecting libraries from which the open spectrum should be deleted.
Search	Opens the Search Spectral Library dialog for finding spectral matches for the selected peak. For more information, refer to Search for DAD Spectral Matches.

TOOLBAR

Click an icon to perform the action described below:

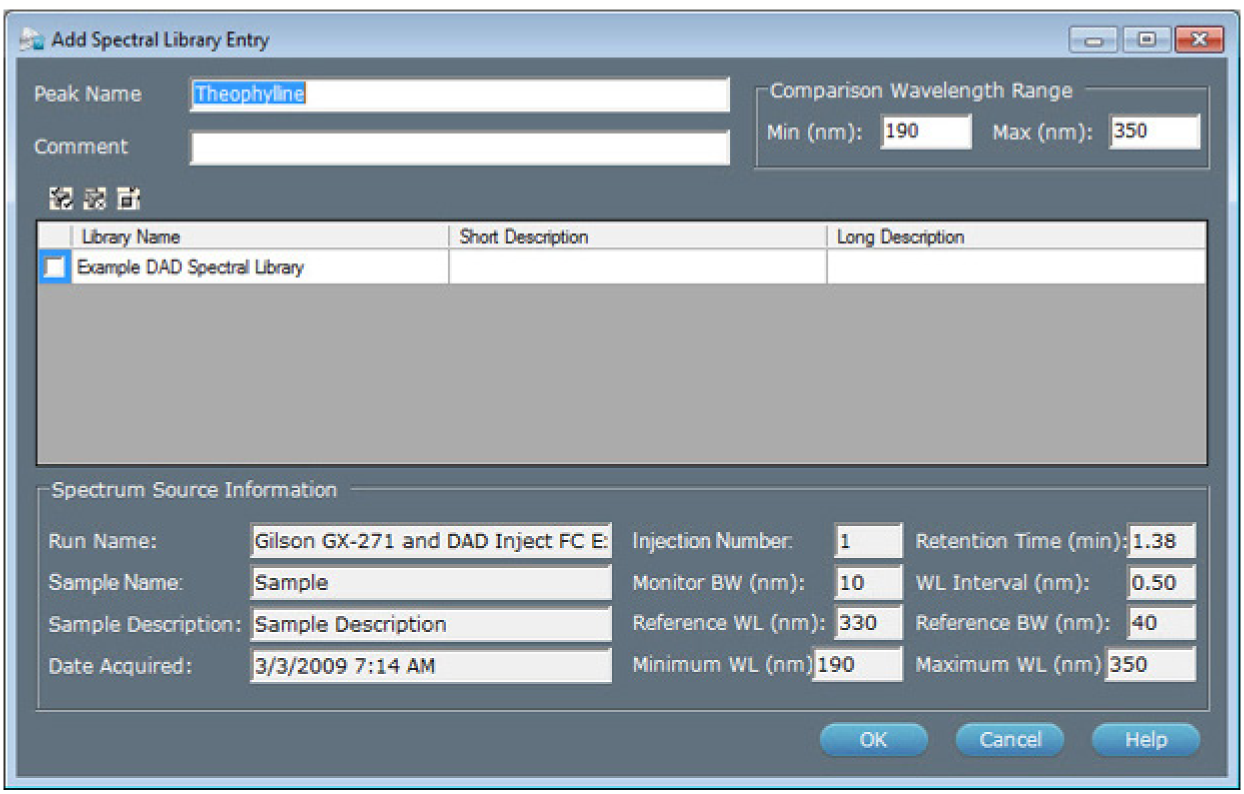
ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the spectrum as it is currently viewed on-screen.
	Copy to clipboard.	Copies the spectrum, as it is currently viewed on-screen, to the clipboard.
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed spectrum.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed spectrum.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed spectrum.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.

TOOLBAR CONTINUED ON PAGE 196

ICON	LABEL	DESCRIPTION
	Select lasso zoom tool.	Enlarges lassoed portion of the spectrum.
	Select cross hair tool.	Displays the Wavelength and Absorbance at the intersect of the crosshair.
	Channel Attributes.	Changes the color of the spectrum and the raw data and allows you to choose to show or hide each.
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.
	Show Original/Normalized.	Toggles showing peak spectrum and spectral match normalized and original.

Build a DAD Spectral Library

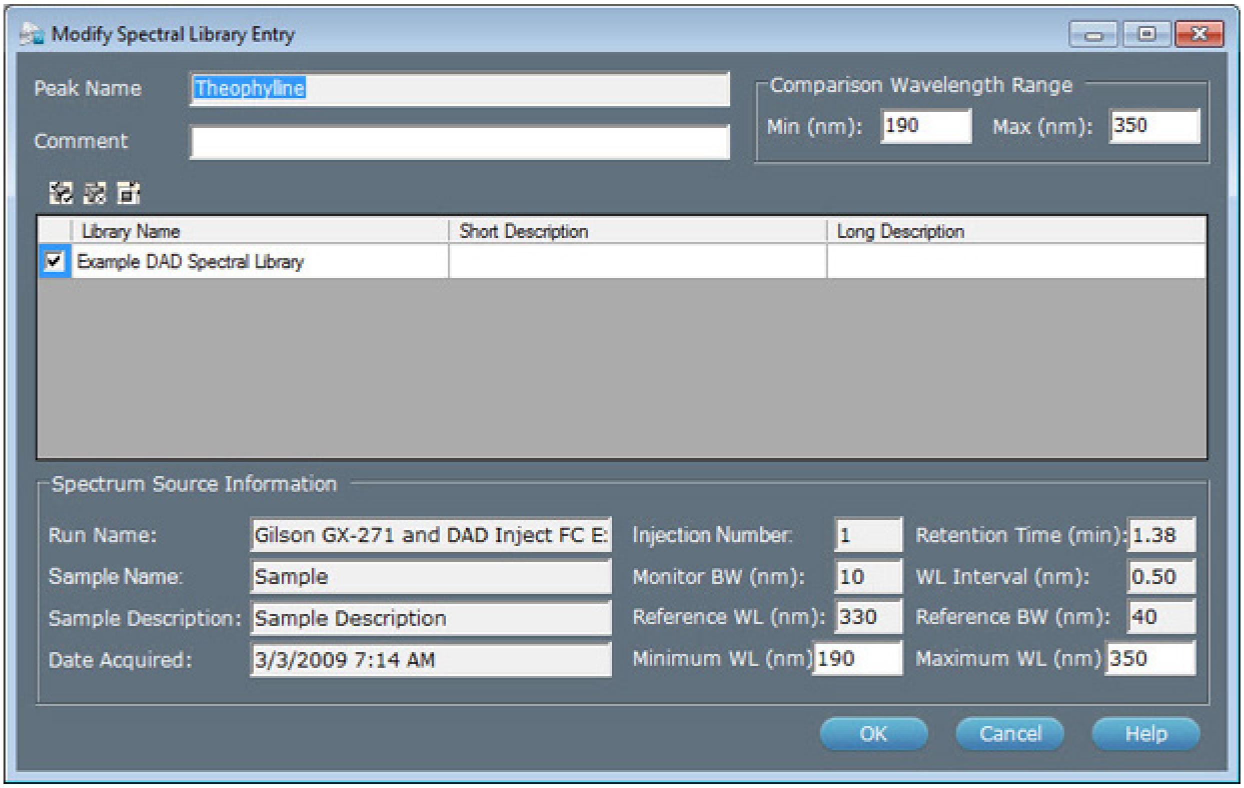
1. From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
2. Click **New** to create a new library using the **New Spectral Library** dialog.
3. In the **New Spectral Library** dialog:
   a. In the Spectral Library **Name** field, type a name.
   b. In the **Short Description** field (optional), type a brief description of the library.
   c. In the **Long Description** field (optional), type a detailed description of the library.
   d. Click **OK**. The new library opens.



   e. Select the name or number of the integrated peak from the drop-down list of **Integrated Peaks**.
   f. Click **Add**. The **Add Spectral Library Entry** dialog appears.

4. In the **Add Spectral Library Entry** dialog:
    a. In the **Peak Name** field, change the peak name, if desired. Peak names must be unique to ALL spectral libraries.
    b. In the **Comment** field (optional), type a brief description of how data for the peak was acquired. For example, include mobile phase and column information.
    c. In the **Comparison Wavelength Range** fields, specify the wavelengths TRILUTION LC will use when comparing the spectral library peak against an unknown peak. The default values identify the entire wavelength range collected during a run.
    d. Select the check box next to the **Library Name** for each library to which the peak should be added.
    e. Click **OK** to exit the **Add Spectral Library Entry** dialog and save the peak spectrum.
5. View the spectrum for a peak by clicking the table row in the spectral library.

Modify a DAD Spectral Library Entry

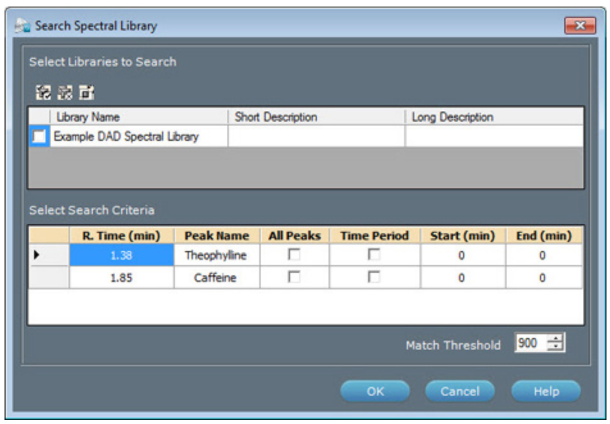


1. Open a spectral library:
    a. On the **Library** tab, click **Open**. The **Open Spectral Library** dialog appears.
    b. Select the check box next to the **Library Name** for each library to open.
    c. Click **OK**.
2. Click to select a spectrum in the library. The spectrum opens graphically below in a tabbed view.
3. Click **Modify** to display the **Modify Spectral Library Entry** dialog.

RESULTS

4. In the **Modify Spectral Library Entry** dialog:
   a. In the **Comment** field (optional), type a brief description of how data for the peak was acquired. For example, include mobile phase and column information.
   b. In the **Comparison Wavelength Range** fields, specify the wavelengths TRILUTION LC will use when comparing the spectral library peak against an unknown peak. The default values identify the entire wavelength range collected during a run.
   c. Select the check box next to the **Library Name** for each library to which the peak should be added.
   d. In the **Minimum WL** and **Maximum WL** fields, specify the wavelength range for the spectrum to be saved to the library.
5. Click **OK**.

Search for DAD Spectral Matches



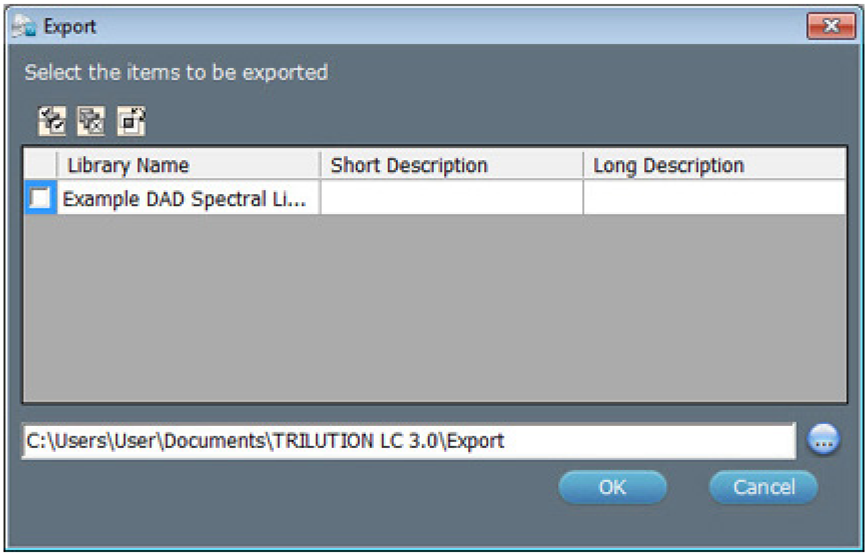
1. Select the name or number of one or more integrated peaks from the drop-down list of **Integrated Peaks**. As each peak is selected, a tab displays above the spectrum.
2. Click **Search**. The **Search Spectral Library** dialog appears.
3. In the **Search Spectral Library** dialog:
   a. Select the check box next to the **Library Name** for each library to be searched.
   b. For each peak spectrum to match, do one of the following:
      - Select the check box next to the **Peak Name** and under **All Peaks** to search all spectral library peaks.
      - Select the check box next to the **Peak Name** and under **Time Period** and then enter **Start** and **End** times to limit the search to spectral library peaks whose retention times are within that time period.
   c. In the **Match Threshold** field, indicate the smallest match value to be reported. A match value of 1000 indicates a perfect match.
4. Click **OK** to begin the search.
5. When the search completes, displays the five closest matches.
6. In the tabbed spectrum view, select a spectrum. From the drop-down list of **Library Matches**, select a spectrum to overlay. The integrated peak spectrum displays in red, the matched spectrum displays black.
7. The peak spectrum and spectral match are normalized. To view the originals, click .

8. To remove the overlaid spectrum, right-click on the spectrum tab and then select **Close Tab** to close the spectrum tab.

Delete DAD Spectral Library Entry

1. Open a spectral library:
   a. On the **Library** tab, click **Open**. The **Open Spectral Library** dialog appears.
   b. Select the check box next to the **Library Name** for each library to open.
   c. Click **OK**.
2. Click to select a spectrum in the library. The spectrum opens graphically below in a tabbed view.
3. Click **Delete Spectrum** to display the **Select Spectral Library** dialog.
4. In the **Select Spectral Library** dialog, select the libraries from which the open spectrum should be deleted.
5. Click **OK**.

Export DAD Libraries



1. To access the spectral libraries, do either of the following:
   - From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
   - From the **Project Library**, double-click **DAD Spectral Libraries**.
2. Click **Export** to display the **Export** window.
3. In the **Export** window:
   a. In the **Select the items to be exported** field, select the spectral libraries.
   b. Designate a path to which the libraries should be exported:
      1. Click to display the **Browse For folder** window.
      2. On the **Browse For folder** window, select a folder, and then click **OK**.

4. Click **OK**. On completion of the export operation, the spectral libraries are saved in the specified folder with a .LCSL extension.
5. When the export success/fail dialog appears:
   - Click **Details** to view the log information of the export operation.
   - Click **OK**.

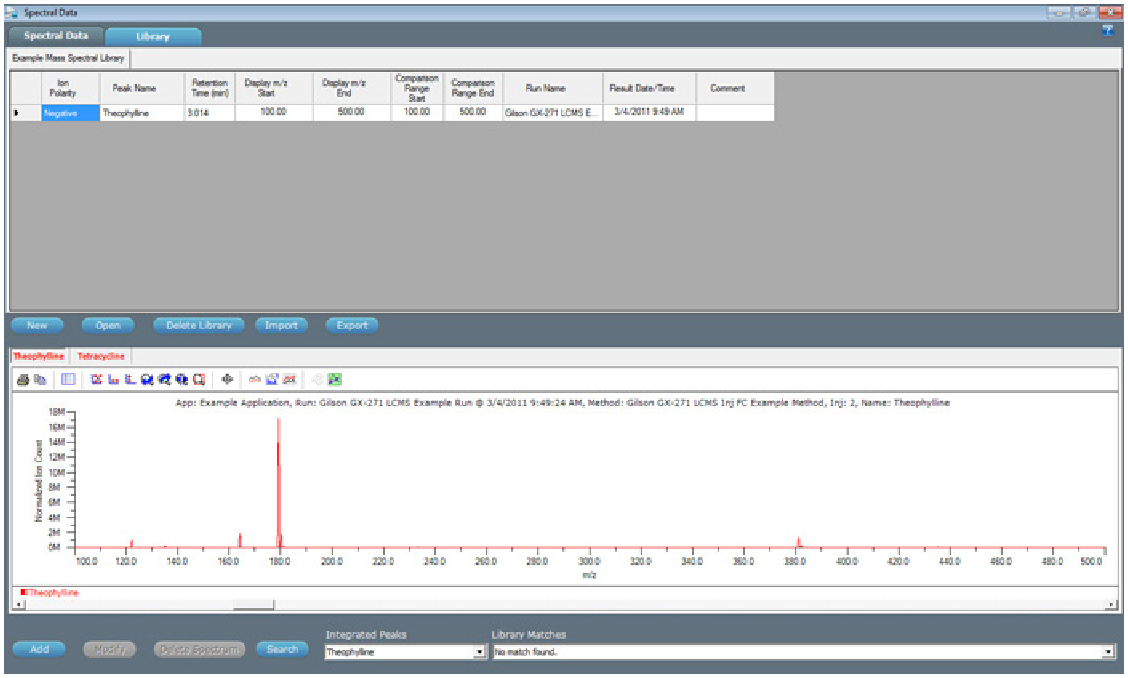
Import DAD Libraries

1. To access the spectral libraries, do either of the following:
   - From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
   - From the **Project Library**, double-click **DAD Spectral Libraries**.
2. Click **Import** to display the **Import** window.
3. From the **Import** window:
   a. Browse for and select the **Spectral Library Export Files** (.LCSL).
   b. Click **Open**.
4. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Delete DAD Spectral Libraries

1. To access the spectral libraries, do either of the following:
   - From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
   - From the Project Library, double-click **DAD Spectral Libraries**.
2. Click **Delete Library** to display the **Delete Spectral Library** dialog.
3. Select the check box next to the name of each DAD spectral library to delete.
4. Click **OK**.
5. When asked to confirm the deletion, click **OK**. The DAD spectral libraries are deleted.

Library Tab (MS)



In TRILUTION LC, you can assemble reference databases of spectra of known compounds. You can then search and match the database contents to the chromatogram for an unknown sample and report the outcome.

You can perform spectral matching at run time or during post-run re-analysis.

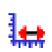
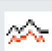
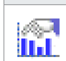
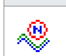
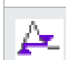
ACTION BUTTONS

The following action buttons are located on the **Library** tab.

ACTION BUTTON	DESCRIPTION
New	Creates a new library. For more information, refer to Build a Mass Spectral Library.
Open	Opens an existing library.
Delete Library	Opens the Delete Mass Spectral Library dialog for selecting libraries to delete.
Import	Imports a .LCML file.
Export	Exports the Spectral Library to a specified location as a .LCML file.
Add	Opens the Add Mass Spectral Library Entry dialog for adding a peak spectrum to one or more spectral libraries. For more information, refer to Build a Mass Spectral Library.
Modify	Opens the Modify Mass Spectral Library Entry dialog for modifying the MS Comparison Parameters (m/z) or comment for an existing spectrum or for adding an existing spectrum to additional libraries. For more information, refer to Modify a Mass Spectral Library Entry.
Delete Spectrum	Opens the Select Spectral Library dialog for selecting libraries from which the open spectrum should be deleted.
Search	Opens the Search Mass Spectral Library dialog for finding spectral matches for the selected peak. For more information, refer to Search for Mass Spectral Matches.

TOOLBAR

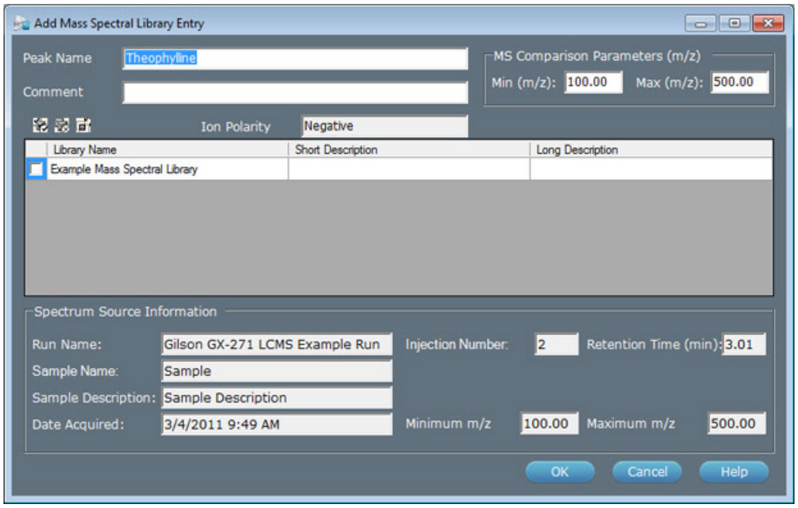
Click an icon to perform the action described below:

ICON	DESCRIPTION
	Displays the print dialog for printing the spectrum as it is currently viewed on-screen.
	Copies the spectrum, as it is currently viewed on-screen, to the clipboard.
	Toggles showing or hiding the legend.
	Scales both axes to minimum and maximum values for the displayed spectrum.
	Scales the X-axis to minimum and maximum values for the displayed spectrum.
	Scales Y-axis to minimum and maximum values for the displayed spectrum.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Enlarges lassoed portion of the spectrum.
	Displays the ion count and mass (m/z) at the intersect of the crosshair.
	Changes the color of the spectrum and the raw data and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.
	Toggles showing peak spectrum and spectral match normalized and original.
	Toggle button for hiding or showing the background.

Build a Mass Spectral Library

1. From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
2. Click **New** to create a new library using the **New Spectral Library** dialog.
3. In the **New Spectral Library** dialog:
    a. In the **Library Name** field, type a name.
    b. In the **Short Description** field (optional), type a brief description of the library.
    c. In the **Long Description** field (optional), type a detailed description of the library.
    d. Click **OK**. The new library opens.

4. To add a peak spectrum into the spectral library:

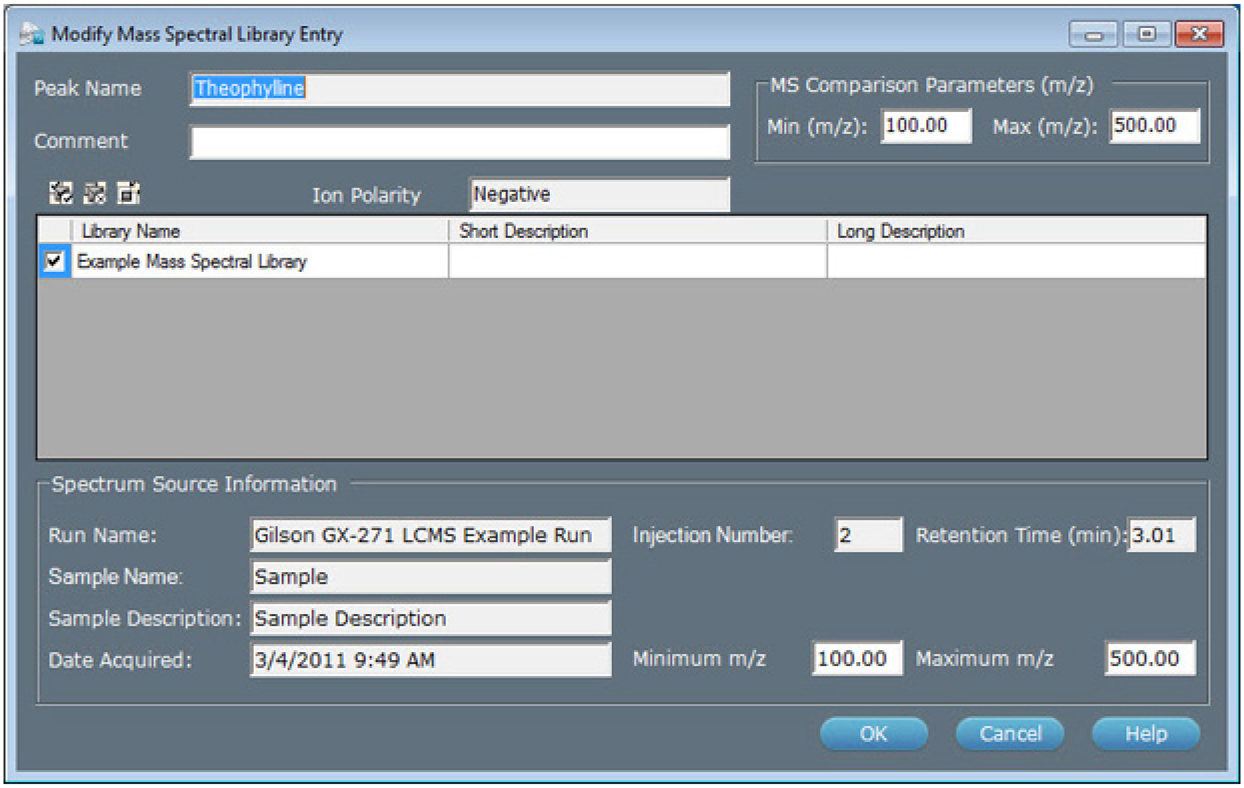


   a. Select the name or number of the integrated peak from the drop-down list of **Integrated Peaks**.
   b. Click **Add**. The **Add Mass Spectral Library Entry** dialog appears.

5. In the **Add Spectral Library Entry** dialog:
   a. In the **Peak Name** field, change the peak name, if desired. Peak names must be unique to ALL spectral libraries.
   b. In the **Comment** field (optional), type a brief description of how data for the peak was acquired. For example, include mobile phase and column information.
   c. In the **MS Comparison Parameters (m/z)** fields, specify the masses TRILUTION LC will use when comparing the spectral library peak against an unknown peak. The default values identify the entire scan range collected during a run.
   d. Select the check box next to the **Library Name** for each library to which the peak should be added.
   e. Click **OK** to exit the **Add Mass Spectral Library Entry** dialog and save the peak spectrum.

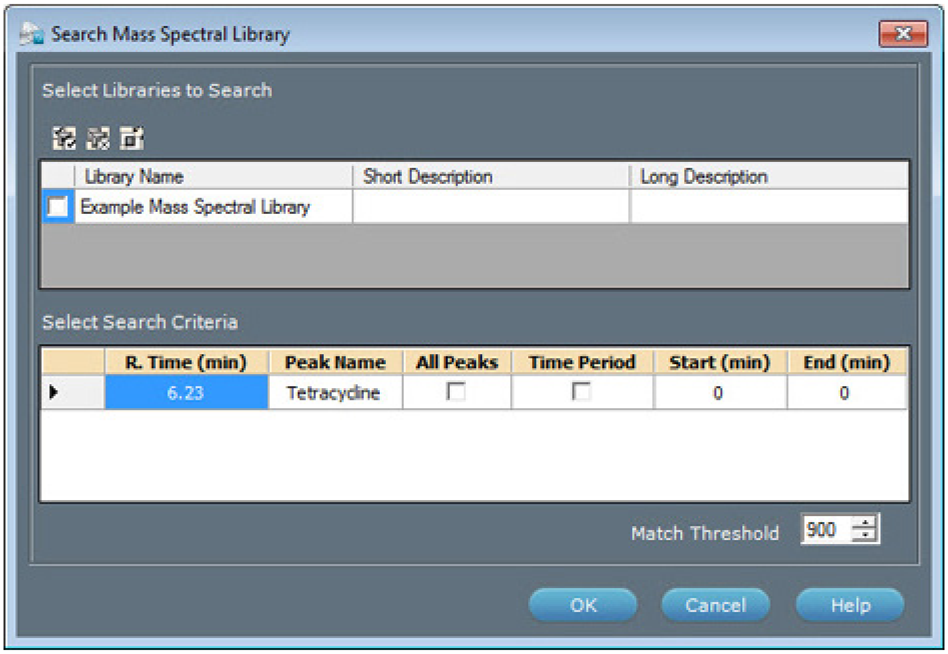
6. View the spectrum for a peak by clicking the table row in the spectral library.

Modify a Mass Spectral Library Entry



1. Open a spectral library:
   a. On the **Library** tab, click **Open**. The **Open Spectral Library** dialog appears.
   b. Select the check box next to the **Library Name** for each library to open.
   c. Click **OK**.
2. Click to select a spectrum in the library. The spectrum opens graphically below in a tabbed view.
3. Click **Modify** to display the **Modify Mass Spectral Library Entry** dialog.
4. In the **Modify Mass Spectral Library** dialog:
   a. In the **Comment** field (optional), type a brief description of how data for the peak was acquired. For example, include mobile phase and column information.
   b. In the **MS Comparison Parameters (m/z)** fields, specify the mass range TRILUTION LC will use when comparing the spectral library peak against an unknown peak. The default values identify the entire mass range collected during a run.
   c. Select the check box next to the **Library Name** for each library to which the peak should be added.
   d. In the **Minimum m/z** and **Maximum m/z** fields, specify the mass range for the spectrum to be saved to the library.
5. Click **OK**.

Search for Mass Spectral Matches



1. Select the name or number of one or more integrated peaks from the drop-down list of **Integrated Peaks**. As each peak is selected, a tab displays above the spectrum.
2. Click **Search**. The **Search Mass Spectral Library** dialog appears.
3. In the **Search Mass Spectral Library** dialog:
   a. Select the check box next to the **Library Name** for each library to be searched.
   b. For each peak spectrum to match, do one of the following:
      - Select the check box next to the **Peak Name** and under **All Peaks** to search all spectral library peaks.
      - Select the check box next to the **Peak Name** and under **Time Period** and then enter **Start** and **End** times to limit the search to spectral library peaks whose retention times are within that time period.

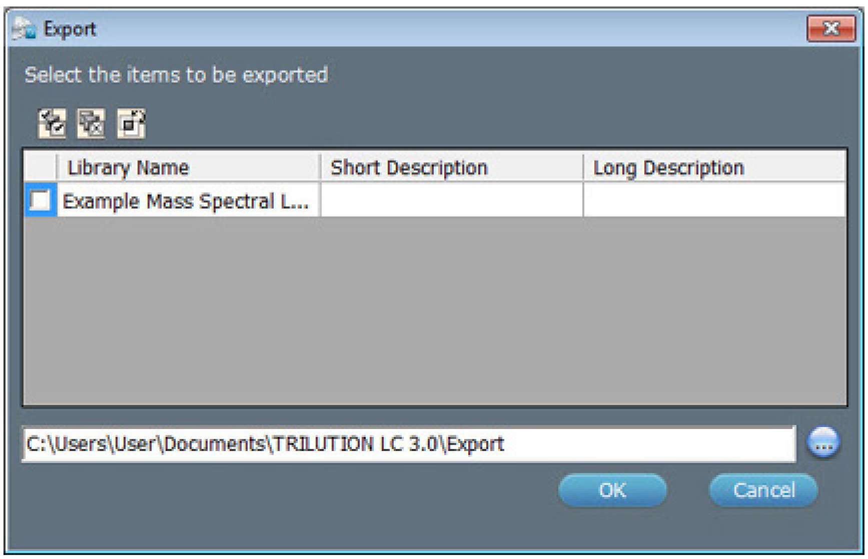
   c. In the **Match Threshold** field, indicate the smallest match value to be reported. A match value of 1000 indicates a perfect match.
4. Click **OK** to begin the search.
5. When the search completes, displays the five closest matches.
6. In the tabbed spectrum view, select a spectrum. From the drop-down list of **Library Matches**, select a spectrum to overlay. The integrated peak spectrum displays in red, the matched spectrum displays black.
7. The peak spectrum and spectral match are normalized. To view the originals, click .
8. To remove the overlaid spectrum, right-click on the spectrum tab and then select **Close Tab** to close the spectrum tab.

RESULTS

Delete Mass Spectral Library Entry

1. Open a spectral library:
   a. On the **Library** tab, click **Open**. The **Open Mass Spectral Library** dialog appears.
   b. Select the check box next to the **Library Name** for each library to open.
   c. Click **OK**.
2. Click to select a spectrum in the library. The spectrum opens graphically below in a tabbed view.
3. Click **Delete Spectrum** to display the **Select Spectral Library** dialog.
4. In the **Select Spectral Library** dialog, select the libraries from which the open spectrum should be deleted.
5. Click **OK**.

Export Mass Spectral Libraries



1. To access the spectral libraries, do either of the following:
   - From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
   - From the **Project Library**, double-click **Mass Spectral Libraries**.
2. Click **Export** to display the **Export** window.

3. In the **Export** window:
   a. In the **Select the items to be exported** field, select the spectral libraries.
   b. Designate a path to which the libraries **should be exported:**
      1. **Click** ![icon] **to display the Browse** For folder window.
      2. On the **Browse For folder** window, select a folder, and then click **OK**.

4. Click **OK**. On completion of the export operation, the spectral libraries are saved in the specified folder with a .LCML extension.

5. When the export success/fail dialog appears:
   - Click **Details** to view the log information of the export operation.
   - Click **OK**.

Import Mass Spectral Libraries

1. To access the spectral libraries, do either of the following:
   - From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
   - From the **Project Library**, double-click **Mass Spectral Libraries**.

2. Click **Import** to display the Import window.

3. From the **Import** window:
   a. Browse for and select the Spectral Library Export Files (.LCML).
   b. Click **Open**.

4. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Delete Mass Spectral Libraries

1. To access the spectral libraries, do either of the following:
   - From the **Run Results**, click **Spectral Data** and then select the **Library** tab.
   - From the **Project Library**, double-click **Mass Spectral Libraries**.

2. Click **Delete Library** to display the **Delete Spectral Library** dialog.

3. Select the check box next to the name of each mass spectral library to delete.

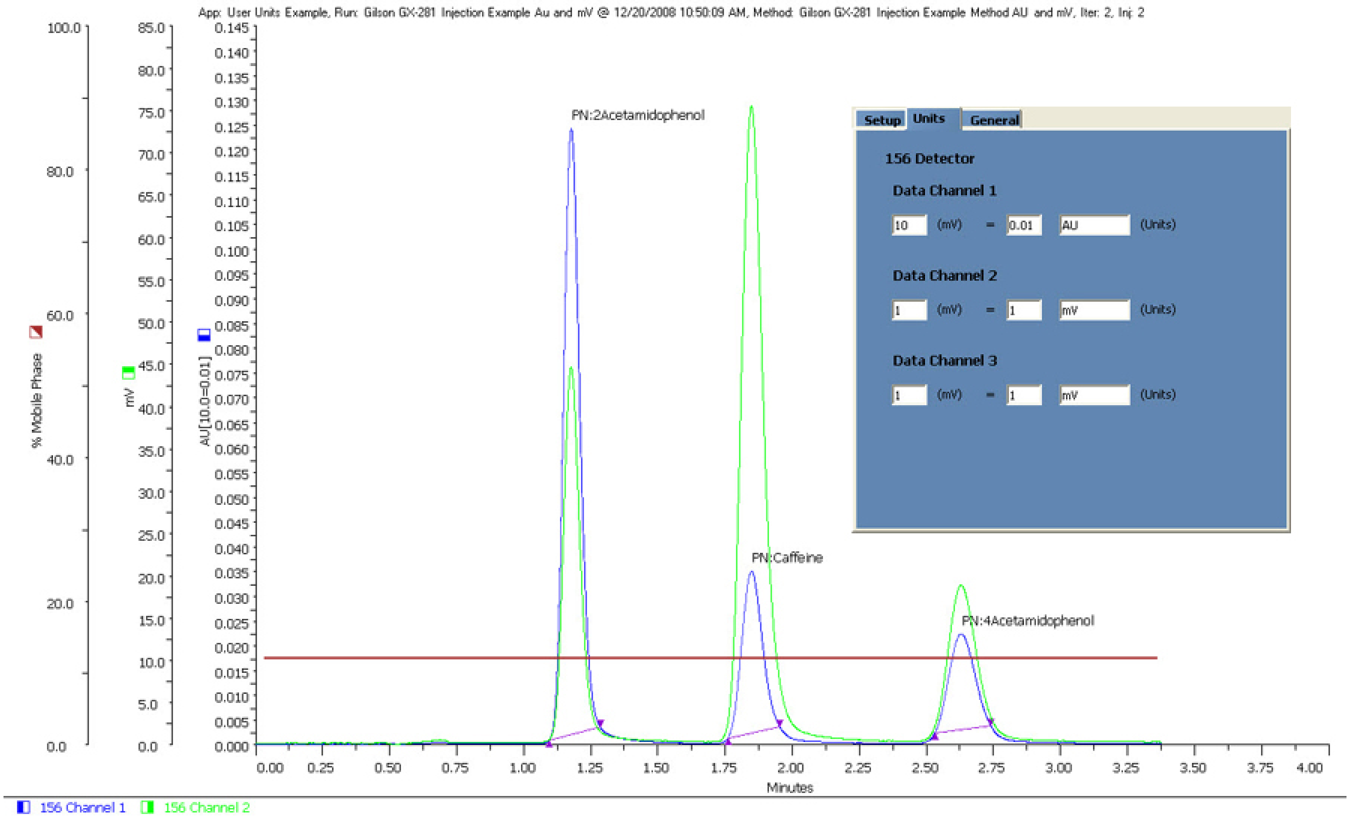
4. Click **OK**.

5. When asked to confirm the deletion, click **OK**. The mass spectral libraries are deleted.

Chromatogram

Shows the chromatogram plot for collected traces in mV, Absorbance, TIC, or user units.

The following example shows one channel using mV and the other channel using user units as set in the configuration for the detector. The color and pattern of the symbol on the axis corresponds to the symbol and color used to identify the data channel in the legend.



Toolbar

Click an icon to perform the action described below:

ICON	LABEL	DESCRIPTION
	Print.	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copy to clipboard.	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Peak Analysis Result	Displays the Peak Analysis Result window.
	Show/Hide Fraction Collection	Toggles between hiding and showing fraction collection start and stop lines.
	Show/Hide Online Mobile Phase	Toggles between hiding and showing actual percent mobile phase
	Show/Hide Offline Mobile Phase	Toggles between hiding and showing expected percent mobile phase
	Show/Hide Legend.	Toggles showing or hiding the legend.
	Show/Hide Baseline	Toggles between hiding and showing the baseline. This icon is disabled in normalized view.

TOOLBAR CONTINUED ON PAGE 209

ICON	LABEL	DESCRIPTION
	Set auto scale.	Scales both axes to minimum and maximum values for the displayed traces.
	Set X axis to auto scale.	Scales the X-axis to minimum and maximum values for the displayed traces.
	Set Y axis to auto scale.	Scales Y-axis to minimum and maximum values for the displayed traces.
	Return to previous zoomed parameters.	Returns view to last zoom (multiple undo zoom).
	Return to next zoomed parameters.	Returns view to next zoom (multiple redo zoom).
	Select point zoom tool.	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Select lasso zoom tool.	Enlarges lassoed portion of the graph.
	Select cross hair tool.	Displays the time, signal level, and mobile phase composition at the intersect of the crosshair.
	Select move label tool	Allows moving peak labels.
	Select color peak region tool	Allows coloring peaks. Named peaks use the color assigned in the peak table. Unnamed peaks use green. This icon is disabled in normalized view.
	Select move channel tool	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms since you can adjust for varying retention times by aligning peaks in the chromatogram.
	Select move baseline tool	Allows selecting a peak for which the baseline will be modified or deleted. This icon is disabled in normalized view. For more information, refer to Manual Baseline Adjustment.
	Select delete baseline tool	After using the move baseline tool ( ) to select the baseline, click to delete the selected baseline. This icon is disabled in normalized view. For more information, refer to Manual Baseline Adjustment.
	Select snap baseline tool	After using the move baseline tool ( ) to select the baseline, click to snap all points to the baseline. This icon is disabled in normalized view. For more information, refer to Manual Baseline Adjustment.
	Select snap baseline endpoint tool	After using the move baseline tool ( ) to select the baseline, click to snap endpoints to the baseline. This icon is disabled in normalized view. For more information, refer to Manual Baseline Adjustment.
	Select insert baseline tool	Inserts a new baseline. This icon is disabled in normalized view. For more information, refer to Manual Baseline Adjustment.
	Channel Attributes.	Changes the color of the traces and mobile phase and allows you to choose to show or hide each.

TOOLBAR CONTINUED ON PAGE 210

ICON	LABEL	DESCRIPTION
	Axis Attributes.	Sets the lower limit, upper limit, increment value, and color for each axis.
	Peak Label Attributes.	Changes the orientation and color of the peak name labels and allows you to choose to show or hide the label.
	Grid Attributes.	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.
	Show Original/Normalized	Toggles showing the original and the normalized view. The normalized view scales all data to fit within a 0–1.0 Y-axis range.

Right-click Menu

Right-click in the graph to display the following menu options:

MENU	DESCRIPTION
Point zoom	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
Lasso zoom	Enlarges lassoed portion of the graph.
Cross hairs	Displays the minutes and mVolts at the intersect of the crosshair.
Move channel	Moves one or more of the traces. This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms since you can adjust for varying retention times by aligning peaks in the chromatogram.
Move label	Allows moving peak labels.
Move baseline	Allows selecting a peak for which the baseline will be modified or deleted.
Delete baseline	Deletes the selected baseline.
Snap baseline	Snaps all points to the baseline.
Snap baseline endpoint	Allows snapping points to the baseline.
Color peak region	Allows coloring peaks. Named peaks use the color assigned in the peak table. Unnamed peaks use green.
Insert baseline	Inserts a new baseline.

Select the **Move Channel** tool () and then right-click on a trace to display the following menu options:

MENU	DESCRIPTION
Set Offset	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the trace in either the X (Minutes) or Y (mVolts) direction.
Set mVolts Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the Y-direction.
Set All mVolts Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the Y-direction.
Set Minutes Offsets	After moving the trace, this option provides an additional menu to zero the trace (Zero), return the trace to the previous setting (Last Setting), or revert to the original setting (Original Setting) in the X-direction.
Set All Minutes Offsets	After moving multiple traces, this option provides an additional menu to zero the traces (Zero), return the traces to the previous setting (Last Setting), or revert to the original settings (Original Setting) in the X-direction.
Move in Minutes Only	Allows moving the trace only horizontally.
Move in mVolts Only	Allows moving the trace only vertically.

Shows the location on the bed layout for the selected sample.

Fraction Bed Layout

Shows the location on the bed layout of the fractions collected from the selected sample.

Double-click on the fraction to display the background subtracted mass spec fraction spectra, if applicable.

Mass Spec Spectra for Fractions

Double-click on a fraction in the **Fraction Bed Layout** to display the background subtracted mass spec fraction spectra, if applicable.

Action Buttons

The following action buttons are in the lower left corner of the **Run Results** window.

ACTION BUTTON	DESCRIPTION
Save	Saves changes made to the Run Results after re-analysis or analysis of manual changes.
Preview	View the analysis for all samples for a single Method, Device/Channel, and Analysis. The method is selected from the Samples drop-down list. For more information about the analysis report and additional ways to view it, refer to Reports.
Re-Analyze	Analyzes data using new conditions and/or integrates peaks differently. For more information, refer to How to Analyze Data in a Different Way.
Analyze Manual Changes	Analyzes data after a Manual Baseline Adjustment.
Edit	Opens the Peak Integration and Report tabs for modification.
Previous	Selects the previous sample.
Next	Selects the next sample.

Info Window

Displays Application name, Run Name, Method name and version, Sample Name and Sample Number, and whether or not the results were from a manual run.

How to View Run Results

1. To view the run results:
2. Right-click on an application in the **Project Library** and then select **Results** or double-click the results icon (R) to display the **Results** window.
3. Double-click the run name to display the result in the **Run Results** window.
4. To view each trace collected for a sample, select the data channel from the **Device/Channel** drop-down list and the analysis from the **Analysis** drop-down menu for the trace to display. Click **Save** to save the selected analysis as the default for the selected sample.

5. Optionally, browse for an analysis or additional analysis from a saved method by clicking . Click **Re-Analyze** to apply the new conditions to the selected sample or all samples (depending on the option selected in the **Browse Analysis** dialog) that were run with the same method and used the same data channel. When asked if you want to save data, click **Yes** to store the outcome of the re-analysis to the analysis report or click **No** to update only the chromatogram in the Run Results window.
6. If the sample was excluded from the report when the sample list was created (refer to Report), add it to the report by browsing an analysis and then re-analyzing (refer to How to Analyze Data in a Different Way).
7. If spectral data is available for the sample, the **Spectral Data** button is active and can be clicked. For more information about viewing spectral data, refer to Spectral Data.

Compare Traces for Different Samples in the Same Window

To view traces collected for different samples in the same window:

1. Click **Add** to browse previous runs for sample and channel combinations
2. Double-click the run name and then select the iteration numbers to overlay.
3. Repeat for each additional sample and channel combination to be added.

NOTE	Data cannot be overlaid or merged into an analysis report.

Remove Overlaid Traces

To remove the overlaid traces from the graph, click **Clear**.

How to Overlay Results to Compare Sample Traces

View traces collected for different samples in the same window:

1. Click **Add** to browse previous runs for sample and channel combinations.
2. Double-click the run name and then select the iteration numbers to overlay.
3. Repeat for each additional sample and channel combination to be added.

NOTE	Data cannot be overlaid or merged into an analysis report.

Remove Overlaid Traces

To remove the overlaid traces from the graph, click **Clear**.

How to Analyze Data in a Different Way

The **Run Results** window enables modifying the analysis (for the open results only) in the **Result Analysis Builder** so the data can be analyzed using new conditions and peaks can be integrated differently. Optionally, the outcome of the analysis can be stored to the analysis report.

1. Click **Edit**.
2. Modify analysis parameters by doing any or all of the following:
   - change the Peak Table.
   - change integration events. Refer to Peak Integration Tab.
   - change channel scaling parameters. Refer to Data Channel Settings.
   - change report settings. Refer to Report Tab.
3. Click **OK** to return to the **Run Results** window.
4. In the **Run Results** window, click **Re-Analyze**. When asked if you want to save data, click **Yes** to store the outcome of the re-analysis to the analysis report. Click **No** to update the chromatogram in the **Run Results** window.
5. If re-analyzing a calibration, the **Recalibration Amount** window appears. Do any of the following:
   - Add or remove samples from the calibration curve by selecting or clearing the check box next to the sample number.
   - Modify the actual and nominal amounts for each peak.
   - Click **OK** to accept any changes made and re-analyze or click **Cancel** to reject the changes made and re-analyze.
6. Optionally, manually adjust baselines (refer to Manual Baseline Adjustment).

Manual Baseline Adjustment

View and modify the baseline generated for samples. Changes to the baseline affect peak integration reporting in all reports.

Adjust the baseline for a peak, integrate a peak, or disable integration of a peak.

Adjust the baseline for a peak. To adjust the baseline beneath a peak, use the **Move Baseline** tool ( ) to select the peak, and then point and drag the points at the beginning or end of the peak.

Integrate a peak. To integrate a peak not currently integrated, use the **Insert Baseline** tool ( ). Move the mouse pointer to the starting point for the peak. Click and drag the mouse pointer below a peak to draw its baseline. Release the mouse button to set the end point for the peak.

Remove peak integration. To inhibit integration of a peak, use the **Move Baseline** tool ( ) to select the peak, and then click the **Delete Baseline** icon ( ).

To adjust the baseline:

1. Select either the begin point (up triangle) and end point (down triangle) for each integrated peak.
2. Drag to the desired location then release.
    a. To snap all points back to the baseline, click the **Snap Baseline** icon ( ).
    b. To snap points back to the baseline, select the **Snap Baseline Endpoint** tool ( ) and then click each point to snap to the baseline.
3. Click **Analyze Manual Changes**.
    a. Click **Yes** to save data.
    b. Click **No** to save data later. To save data later, click **Save**.

NOTE	Re-analyzing after a manual baseline adjustment cancels any baseline changes.

CALIBRATIONS

Generate calibration plots during an HPLC run or a batch re-analysis of calibrator samples. Access calibrations from the **Results** window by selecting the **Calibrations** tab. For more information about the **Results** window, refer to Results Window.

Key concepts to understand about calibrations are:

- How to View Calibrations
- How to Recalibrate and Re-analyze

Results Window - Calibration Tab

Double-click the run name (channel) to show the calibration plot that is used to calculate amounts for unknown samples. Examine the calibration curve generated for each standard peak. Viewing calibration plots is especially important if quadratic or cubic was the curve fitting method used to generate them.

For more information about setting up a run as a calibration, refer to Calibration.

Calibration Window

Graph Pane

The graph pane shows the calibration plot.

Toolbar

Click an icon to perform the action described below.

ICON	DESCRIPTION
	Displays the print dialog for printing the calibration plot as it is currently viewed on-screen.
	Copies the calibration plot, as it is currently viewed on-screen, to the clipboard.
	Displays the Peak Analysis Result window.
	Toggles showing or hiding the legend.
	Scales both axes to minimum and maximum values for the displayed traces.
	Scales the X-axis to minimum and maximum values for the displayed traces.
	Scales Y-axis to minimum and maximum values for the displayed traces.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Zooms in on a point and centers it in the calibration plot as it is viewed on-screen.
	Enlarges lassoed portion of the graph.
	Displays the values at the intersect of the crosshair.
	Changes the color of the calibration curve and allows you to choose to show or hide it.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name labels and allows you to choose to show or hide the label.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

View Calibration Curve

To view the calibration curve, select an analysis from the drop-down and a named peak from the list.

Calibration Report

This report comprises seven parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run), Calibration Plot (the calibration curve data generated by the standards), and Calibration Plot Table (user-specified column contents for standards and controls, may include custom calculations).

View the Calibration Report

To view results from a chromatographic run in which calibrators were injected, click **Preview** to view the Calibration Report.

The Calibration Report appears, displaying the report information selected on the **Method Builder|Analysis|Report** tab from the selected analysis for the selected peak.

How to Recalibrate and Re-analyze

The Recalibration window allows you to add or remove samples from the calibration curve. You can also modify the actual and nominal amounts for each peak. The outcome of the recalibration is stored to a Calibration Report.

To modify the calibration:

1. Access the **Run Results** window by double-clicking the run name (channel) in the **Results** tab of the **Results** window.
2. Click **Re-Analyze**.
3. The **Recalibration Amount** window appears. Do any of the following:
   - Add or remove samples from the calibration curve by selecting or clearing the check box next to the sample number.
   - Modify the Actual Amount and/or Nominal Amount for each peak. If there is a red border around the row number, it is an internal standard.
4. Click **OK** to accept any changes made and re-analyze or click **Cancel** to reject the changes made and re-analyze.

Export/Archive/Restore Calibrations

For information on exporting calibrations, refer to How to Export Results.

For information on archiving calibrations, refer to How to Archive Results.

For information on restoring calibrations, refer to How to Restore Run Results.

WORKING WITH VARIABLES

To make tasks and methods more flexible, use a variable for a command or task property. When creating a method, assign values to any undefined variables used by any tasks. When setting a sample list for a run, assign values to any undefined variables used by the method. A message will be displayed when adding a task to a method or when beginning an application run if a value has not been assigned to a variable or if a variable has an invalid entry.

Two types of variables are available for creation and use in TRILUTION LC: Local (value type) variables and Global (reference type) variables.

Local variables are only visible in the **Variable List** in the task or method in which they were created. The values for local variables are specific to each task or each method iteration and are reset before running the next task or method iteration.

Global variables are available in all tasks and methods and do not reset for each task or each method iteration, thus enabling values to be passed from task to task or iteration to iteration.

Global variables are useful for:

- maintaining changes to variables throughout the application
- applying conditional logic to device feedback at runtime (especially when using GEARS)

The topics related to working with variables are:

- How to Create a New Variable
- View or Filter Variables
- Modify Local Variable Properties
- Delete a Local Variable

How to Create a New Variable

Variables can be created for task properties in the **Method Builder**; refer to Create a New Variable Variables can be created for command and/or task properties in the **Task Builder**; refer to Create a New Variable (Task Builder).

Create a New Variable (Method Builder)

To create a variable:

1. On the **Method Builder - Control** tab, click , which opens the advanced **Variable Properties** dialog.
2. When the advanced **Variable Properties** dialog appears:
   a. In the **Name** field, enter a unique name for the variable.
   b. In the **Type** field, select a variable type from the drop-down menu.
   c. Optionally, enter a default value for the variable (if applicable).
   d. Optionally, enter the minimum value and maximum value (range) for the variable (if applicable).
   e. Select the option for the variable type: **Local** (value type) or **Global** (reference type). (Local is selected by default.)

f. Select **Show in parent** to display the variable in the sample list, even if the variable is not being used. It is selected by default for local variables. For global variables, it is not selected by default.

NOTE	Another way to create a local variable is by entering a unique variable name, instead of a value, for a task property in the Method Builder. A local variable name begins with #, and can be any combination of letters and numbers and can contain some special characters. Valid local variable names would be #FlowRate and #Sample_Vol1.

3. Click **Add. Rep**eat steps 2 and 3 to create additional variables.
4. When finished creating variables, click **OK**.

NOTE	To make an existing global variable available for use in the method, select Visible in Method for the variable in the Global Variable list. To make all global variables available for use in the method, click Select All. To clear the Visible in Method selection for all global variables, click Deselect All.

Create a New Variable (Task Builder)

To create a variable:

1. In the **Task Builder** window, do either of the following:
   - Click , which opens the **Variable Properties** dialog.
   - Drag the **Variable** operator () and then drop it in the workspace, which opens the basic **Variable Properties** dialog.
2. When the **Variable Properties** dialog appears:
   a. In the **Name** field, enter a unique name for the variable.
   b. In the **Type** field, select a variable type from the drop-down menu.
   c. Optionally, enter a default value for the variable (if applicable).
   d. Optionally, enter the minimum value and maximum value (range) for the variable (if applicable)
   e. Select the option for the variable type: Local (value type) or Global (reference type). (Local is selected by default.)
   f. Select **Show in parent** to display the variable in the **Method Builder**, even if the variable is not being used. It is selected by default for local variables. For global variables, it is not selected by default.
   g. Optionally, click the arrow to display the advanced options, and then add values to the **Value List** by typing the value. Values entered in this list display as drop-down values in the task or command in which the variable is used.

NOTE	Another way to create a local variable is by entering a unique variable name, instead of a value, for a task or command property in the Task Builder. A local variable name begins with #, can be any combination of letters and numbers, and can contain some special characters. Valid local variable names would be #FlowRate and #Sample_Vol1.

3. Click **Add. Rep**eat steps 2 and 3 to create additional variables.
4. When finished creating variables, click **OK**.

NOTE

To make an existing global variable available for use in the task, click the arrow to open the advanced Variable Properties dialog, and then select Visible in Task for the variable in the Global Variable list

To make all global variables available for use in the task, click Select All.

To clear the Visible in Task selection for all global variables, click Deselect All.

View or Filter Variables

View Variables

To view variables:

- On the **Method Builder - Control** tab, click , which opens the advanced **Variable Properties** dialog.
- In the **Task Builder** window, do either of the following:
  - Click , which opens the **Variable Properties** dialog.
  - Drag the **Variable** operator () and then drop it in the workspace, which opens the basic **Variable Properties** dialog.

To view the values used for local and global variables during a run and in a spreadsheet, include the Log Variables task in the method.

Filter Variables

To filter variables in the **Variable List**:

1. Open the **Variable Properties** dialog. Refer to View Variables for more information.
2. By default, the option for **Show All Variables** is selected for the **Variable List**. All local variables that are used in the method/task (depending on the builder) or that were created in this instance of the dialog being open are displayed and all global variables for which **Visible** in **Method/Task** (depending on the builder) is selected are also displayed.
   - Select **Show Variables used in Method/Task** (depending on the builder) to only display the variables (local or global) being used in the task or method. Global variables must have the option for **Visible** in **Method/Task** (depending on the builder) selected to display in the **Variable List**.
   - Select **Show Variables NOT used in Method/Task** (depending on the builder) to only display the variables (local or global) not being used in the task or method. Global variables must have the option for **Visible** in **Method/Task** (depending on the builder) selected to display in the Variable List.

Modify Local Variable Properties

NOTE Global variables cannot be modified.

To modify a local variable:

1. Open the **Variable Properties** dialog. Refer to View Variables for more information.
2. Select the row for a local variable in the **Variable List**.

3. Make modifications in the **Properties** fields (NOT in the Variable List), and then click **Modify**.
4. Repeat steps 2 and 3 to modify other local variables.
5. When finished modifying local variables, click **OK** to accept all changes, or **Cancel** to clear all changes.

NOTE	The Show in Parent check boxes are editable in the Variable List for both local and global variables. The Visible in Method/Task (depending on the builder) check boxes are editable in the Global Variable List.

Delete a Local Variable

Global variables cannot be deleted.

To delete a local variable:

1. Open the **Variable Properties** dialog. Refer to View Variables for more information.
2. Select the row for a local variable in the **Variable List** and then do either of the following:
   - Right-click, and then choose **Delete** from the submenu.
   - Press the **DELETE** key on the keyboard.
3. Repeat step 2 to delete other local variables.
4. When finished deleting local variables, click **OK** to accept all changes, or **Cancel** to clear all changes.

REPORTS

The Reports menu is used to generate reports. View and print reports directly or export them to rich text format (*.rtf), Adobe® PDF (*.pdf), Microsoft® Word (*.doc), or Microsoft® Excel (*.xls) file types for further study and formatting.

The following types of reports can be generated:

- Task Report
- Run Report
- Project Report
- Method Report
- Sample Tracking Report
- Analysis Report
- Summary Report
- Calibration Report

Reports Overview

REPORT	DESCRIPTION
Task Report	This report comprises three parts: a brief summation of the task information (name, version, description, modified date, and created date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps).
Method Report	This report comprises six parts: a brief summation of the method information (name, version, descriptions, modified date, and created date), configuration information, bed layout information (racks used), control information (timed sequential task listing), analysis information (timed integration task listing), and report information (options used in the Analysis and Calibration reports). Optionally, a company logo and address can be added to this report using the Method Builder - Analysis - Report Tab - Company Logo & Address.
Project Report	This report comprises three parts: a brief summation of the project information (name, description, modified date, and created date), a brief summation of the application information for each application in the project (name, description, modified date, and created date), and a brief summation of the method information for each method in each application in the project (name, description, modified date, created date, and names of the configuration, bed layout, control, and analysis).
Run Report	This report comprises five parts: a brief summation of the application run information (project name, application name, run name, run date, run by), sample list details (including values for variables) captured at the end of the run, initial volumes, fraction re-injection criteria, and minimum fraction sites criteria.
Sample Tracking Report	This report comprises a brief summation of the application run information (project name, application name, run name, run date, and run by) and the aspirate and dispense actions for each sample and fraction.
Analysis Report	This report comprises five parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Spectrum (only if using a diode array detector or MS detector), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run). Each part is optional and can be omitted by clearing its check box on the Method Builder|Analysis|Report tab. Optionally, a company logo and address can be added to this report using the Method Builder - Analysis - Report Tab - Company Logo & Address.
Summary Report	This report comprises five parts: a brief summation of the run and selected data channel (project name, application name, method name, method version, data instrument name, data channel name, analysis name, report name, run name, and run date), timed integration task listing (Analysis Tasks), details about the data channel settings (Data Channel Settings), a listing of values for all variables used in the application run (Method Variables), the Peak Table, and a Summary Table. The Summary Report can be generated and viewed as an Unknown Summary Report or a Standard Summary Report.
Calibration Report	This report comprises seven parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run), Calibration Plot (the calibration curve data generated by the standards), and Calibration Plot Table (user-specified column contents for standards and controls, may include custom calculations). The Calibration Report can be generated and viewed for each peak. Optionally, a company logo and address can be added to this report using the Method Builder - Analysis - Report Tab - Company Logo & Address.

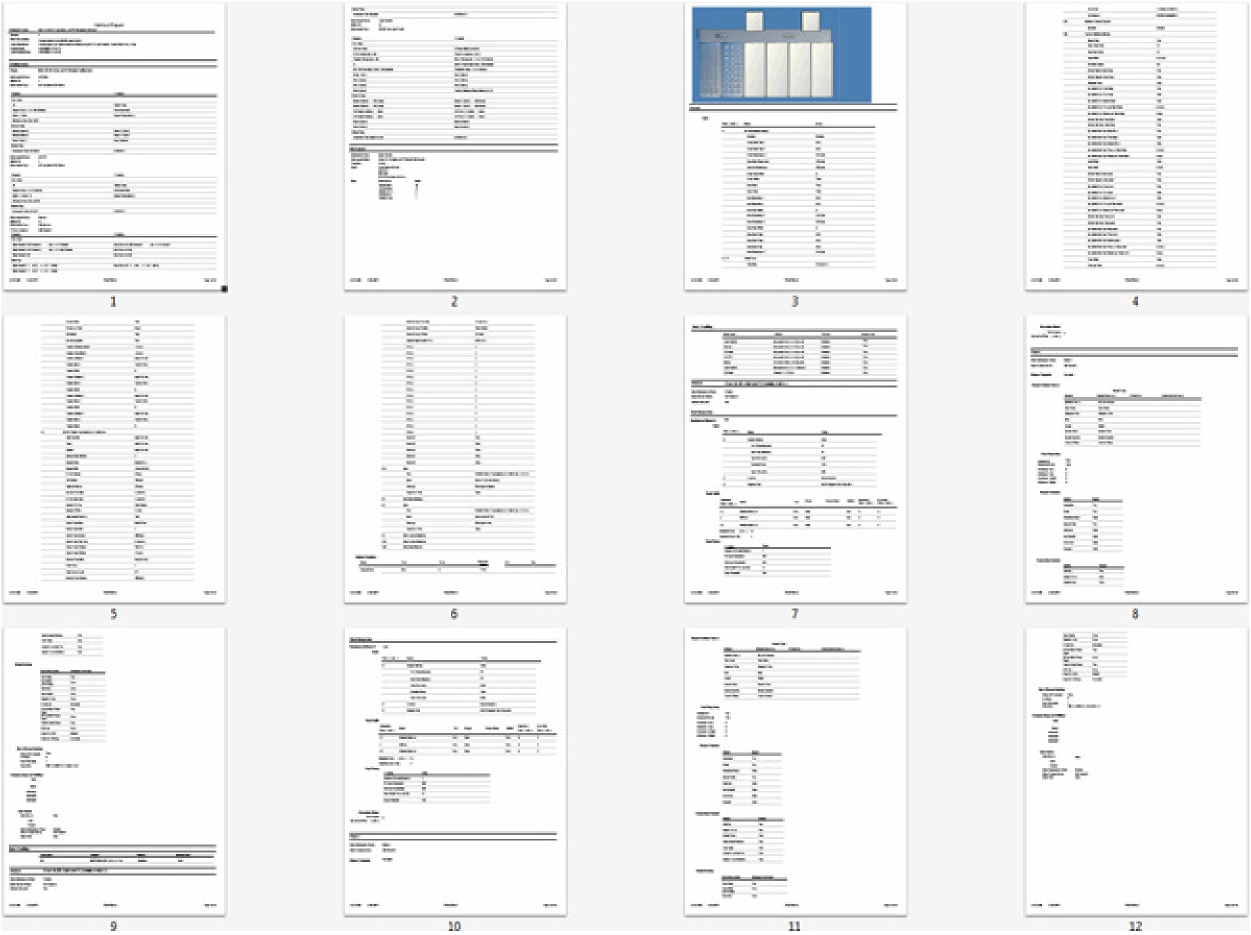
Task Report

This report comprises three parts: a brief summation of the task information (name, version, description, modified date, and created date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps).

Method Report

This report comprises six parts: a brief summation of the method information (name, version, descriptions, modified date, and created date), configuration information, bed layout information (racks used), control information (timed sequential task listing), analysis information (timed integration task listing), and report information (options used in the **Analysis** and **Calibration** reports).

Optionally, a company logo and address can be added to this report using the **Method Builder - Analysis - Report Tab - Company Logo & Address**.



REPORTS

Project Report

This report comprises three parts: a brief summation of the project information (name, description, modified date, and created date), a brief summation of the application information for each application in the project (name, description, modified date, and created date), and a brief summation of the method information for each method in each application in the project (name, description, modified date, created date, and names of the configuration, bed layout, control, and analysis).

Project Report

Project Name Example Methods and Results Project

Short Description	
Long Description	
Created Date	12/18/2008 12:43:25 PM
Last Modified Date	12/18/2008 12:43:25 PM

Application Name Gilson GX-281 Injection and FC Application

Short Description	
Long Description	
Created Date	12/18/2008 12:45:00 PM
Last Modified Date	12/18/2008 12:45:00 PM

Method Name Gilson GX-281 Injection and FC Example Method **Version** 6

Short Description	Example method using GX-281 Liquid Handler
Long Description	Example Inject and Fraction Collection Method using GX-281 Liquid Handler, Fraction Collection by Slope
Created Date	12/18/2008 1:37:29 PM
Last Modified Date	12/22/2008 9:41:55 AM
Configuration	Gilson GX-281 Inject and FC Example Configuration
Bed Layout	Gilson GX-281 Inject and FC Example Bed Layout
Analysis	Gilson GX-281 Inject and FC Example Analysis 1 Gilson GX-281 Inject and FC Example Analysis 2

Method Name Shutdown **Version** 3

Short Description	
Long Description	
Created Date	12/18/2008 1:45:00 PM
Last Modified Date	12/22/2008 8:13:40 AM
Configuration	Gilson Shutdown Example Configuration
Bed Layout	
Analysis	

Method Name Startup **Version** 2

Short Description	
Long Description	
Created Date	12/18/2008 1:43:55 PM
Last Modified Date	12/20/2008 10:55:39 AM
Configuration	Gilson Start Up Example Configuration
Bed Layout	
Analysis	

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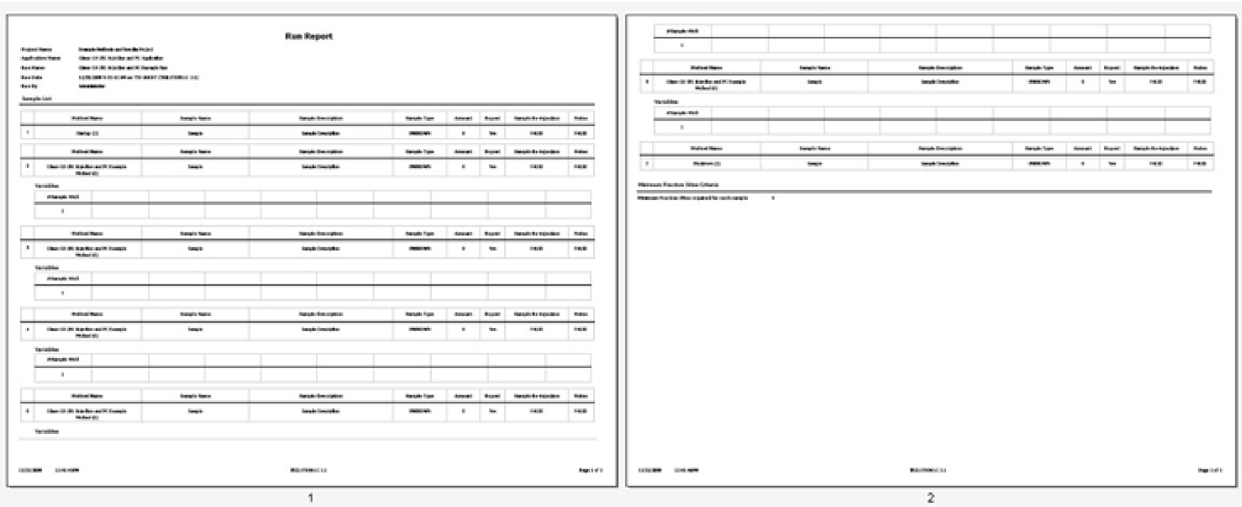
1

Run Report

This report comprises five parts: a brief summation of the application run information (project name, application name, run name, run date, run by), sample list details (including values for variables) captured at the end of the run, initial volumes, fraction re-injection criteria, and minimum fraction sites criteria.


Run Report

1

2

REPORTS

Sample Tracking Report

This report comprises a brief summation of the application run information (project name, application name, run name, run date, and run by) and the aspirate and dispense actions for each sample and fraction.

Sample Tracking Report

Project Name	Example Project
Application Name	Example Application
Run Name	Gilson GX-281 Injection and FC Example Run
Run Date	2/26/2009 11:52:26 AM on 755-GHOST (TRILUTION LC 2.1)
Run By	Administrator

Sample	Zone	Well	Action	Content	Volume (uL)	Unit ID: Syringe
1	Air		Aspirate Air	AirGap	10	25:A
1	Sample Zone	1	Aspirate Probe	AirGap,Sample Zone-1	250	25:A
1	Air		Aspirate Air	AirGap,Sample Zone-1,AirGap	400	25:A
1	Inside Rinse	1	Dispense	AirGap,Sample Zone-1,AirGap	660	25:A,2
1	Inside Rinse	1	Dispense	Reservoir	1000	25:A,2
1	Outside Rinse	1	Dispense	Reservoir	2000	25:A,2
1	Fraction Zone	1	Fraction		8225	25
1	Fraction Zone	2	Fraction		8250	25
1	Fraction Zone	3	Fraction		9100	25
2	Air		Aspirate Air	AirGap	10	25:A
2	Sample Zone	2	Aspirate Probe	AirGap,Sample Zone-2	250	25:A
2	Air		Aspirate Air	AirGap,Sample Zone-2,AirGap	400	25:A
2	Inside Rinse	1	Dispense	AirGap,Sample Zone-2,AirGap	660	25:A,2
2	Inside Rinse	1	Dispense	Reservoir	1000	25:A,2
2	Outside Rinse	1	Dispense	Reservoir	2000	25:A,2
2	Fraction Zone	4	Fraction		8000	25
2	Fraction Zone	5	Fraction		8025	25
2	Fraction Zone	6	Fraction		9275	25

8/24/2012 1:34:03PM TRILUTION LC 3.0 Page 1 of 1

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Analysis Report

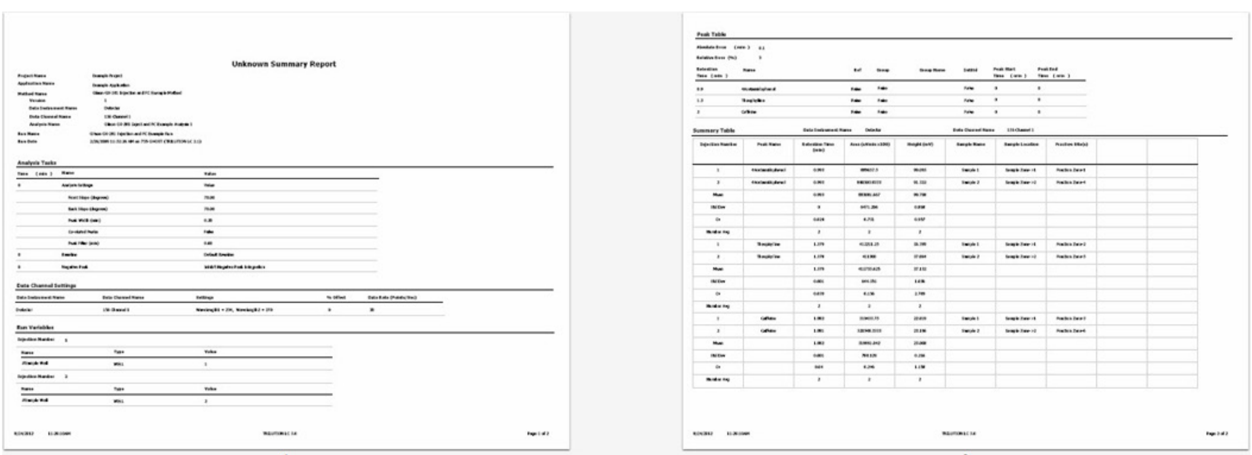
This report comprises five parts: **Annotation** (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), **Graph** (chromatogram), **Spectrum** (only if using a diode array or MS detector), **Sample Table** (user-specified column contents, may include custom calculations), and **Run Variables** (a listing of values for all variables used in the application run). Each part is optional and can be omitted by clearing its check box on the **Method Builder|Analysis|Report** tab.

Summary Report

This report comprises five parts: a brief summation of the run and selected data channel (project name, application name, method name, method version, data instrument name, data channel name, analysis name, report name, run name, and run date), timed integration task listing (Analysis Tasks), details about the data channel settings (Data Channel Settings), a listing of values for all variables used in the application run (Method Variables), the Peak Table, and a Summary Table.

The Summary Report can be generated and viewed as an Unknown Summary Report or a Standard Summary Report.

Specify contents of the Summary Report on the **Method Builder - Analysis - Report** tab.



Calibration Report

This report comprises seven parts: **Annotation** (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), **Graph** (chromatogram), **Sample Table** (user-specified column contents, may include custom calculations), and **Run Variables** (a listing of values for all variables used in the application run), **Calibration Plot** (the calibration curve data generated by the standards), and **Calibration Plot Table** (user-specified column contents for standards and controls, may include custom calculations).

The **Calibration Report** can be generated and viewed for each peak.

Specify contents of the **Calibration Report** on the **Method Builder - Analysis - Report** tab.

View a Report

To open a report:

1. Click **Reports** on the main menu to display the **Reports** window.
2. In the **Reports** window, select the button that corresponds to the report to be viewed.
3. Select the parameters for the report from the drop-down menus.

Viewing Toolbar

Click an icon to perform the action described below.

ICON	LABEL	DESCRIPTION
	Export Report	Exports the report to a file type. For more information, refer to Export a Report.
	Print Report	Prints the report.
	Refresh	Refreshes the report.
	Go to...	Moves between the pages of the report
	Go to Page	Allows for selecting a specific page in the report to view.
	Close Current View	Closes an open sub-report.
	Find Text	Allows for locating the specified text in the report.
	Zoom	Zooms in or out on the report.

Export a Report

1. On the **Reports** window, click the Export ( ) button to display the **Export Report** window.
2. Select a destination folder so that it appears in the **Save in** box.
3. Type a file name into the **File name** box.
4. Select the file type from the **Save as type** box, by clicking on the down arrow and then selecting the format.
5. Click **Save** to save the document. A message box will indicate when the export has completed.

LIST OF TASKS

Gilson supplies read-only tasks for the instruments listed below. For an alphabetical listing of tasks, refer to All Tasks (in alphabetical order).

Detectors

Fraction Collectors

Injectors

Liquid Handlers

Mobile Phase Pumps

Switching Valve

Communication

Syringe Pumps

All Tasks (in alphabetical order)

Gilson Task Name					
151 152 Detector Settings	Detector Autozero Channel	GX-281 Prep Injection with Collection	Mix with Air	Start VERITY 1900 Make Up Pump	VERITY 1910 Splitter Settings
155 156 Detector Settings	Dilute	GX-281 Rack Scan	Mix with Liquid	Start VERITY 1910 Make Up Pump	VERITY 1920 Auto Tune
155 156 Scan Initiation	Dispense	GX-281 Total Loop Injection	Move to Sample Location	Start VERITY 1900 Splitter	VERITY 1920 MS Detector Settings
157 Detector Settings	Execute	GX-281 w-o pump Low Volume Partial Loop Inject	MRA Splitter Set Split Ratio	Start VERITY 1910 Splitter	VERITY 1920 MS Detector Standby
159 Detector Settings	Fraction Collection Settings	GX-281 w-o pump Partial Loop Injection	MRA Splitter Start Splitter	Stop Data Collection	VERITY 1920 MS Detector Start Up
171 172 Detector Settings	Fraction Collection Valve Rinse	GX-281 w-o pump Prep Inject with Collect	MRA Splitter Stop Splitter	Stop Fraction Collection	**VERITY 3240 Solvent Valve Position**
215 819 Low Volume Partial Loop Injection	GSIOC	GX-281 w-o pump Total Loop Injection	Outside Rinse	Stop Make Up Pump	
215 819 Partial Loop Injection	GX Add Diluent	GX-281 w-o pump Z Inject Prep Inj with Collect	Partial Loop Injection	Stop VERITY 1900 Make Up Pump	Voltage On - Off
215 819 Prep Injection with Collection	GX Dilute	GX-281 w-o pump Z Inject Prep Injection	Prep Injection with Prep Injection with Collection High Mount Collection	Stop VERITY 1910 Make Up Pump	Wait for Contact
233 XL Prep Injection with Collection	GX Home Liquid Handler	GX-281 Z Inject Prep Injection	Prime Dilutor	Stop VERITY 1900 Splitter	Wait Time
234 Partial Loop Injection	GX Injection Rinse	GX-281 Z Inject Prep Injection with Collection	Prompt	Stop VERITY 1910 Splitter	Write to Display
234 Total Loop Injection	GX Inside Rinse	High Mount Fraction Collection Valve Flush	Set Detector Mode	Switch VALVEMATE	XL Low Volume Partial Loop Injection
235S Partial Loop Injection	GX Mix with Air	Home Fraction Collector	Set Fraction Site	Sync	XL Partial Loop Injection
235S Total Loop Injection	GX Mix with Liquid	Home Liquid Handler	Set Multiple Bed Collection	Total Loop Injection Overfill	XL Total Loop Injection
235T Injection Rinse	GX Outside Rinse	Injection Rinse	Set Non Peak Per Tube	Transfer	
235T Partial Loop Injection	GX Prime	Injection Valve Position	Set Peak Level	Turn Lamp Off	
235T Total Loop Injection	GX Transfer	Inside Rinse	Set Peak Per Tube	Turn Lamp On	
506C Autozero Channel	GX-271 Low Volume Partial Loop Injection	Log Variables	Set Peak Slope	VERITY 1741 UV-VIS-DAD Settings	
845Z Prep Injection	GX-271 Partial Loop Injection	Low Volume Partial Loop Injection	Set Peak Width	VERITY 1900 Auto Tune	

ALL TASKS (IN ALPHABETICAL ORDER) CONTINUED ON PAGE 235

Gilson Task Name					
845Z Prep Injection with Collection	GX-271 Prep Injection with Collection	Mass Spec Auto Tune	Set Sensitivity	VERITY 1910 Auto Tune	
Add Diluent	GX-271 Prep Injection with Collection High Mount	Mass Spec Check Tune	Set Wavelength	VERITY 1900 MS Detector Settings	
Aspirate	GX-271 Total Loop Injection	Mass Spec Single Quad APCI Settings	Solvent Valve Position	VERITY 1910 MS Detector Settings	
Collection and Travel Depth	GX-271 Total Loop Injection Overfill	Mass Spec Single Quad Settings	Start Data Collection	VERITY 1900 MS Detector Standby	
Conditional Fraction Collection	GX-281 Low Volume Partial Loop Injection	Mass Spec Single Quad Standby	Start Fraction Collection	VERITY 1910 MS Detector Standby	
Contact Open - Close	GX-281 Partial Loop Injection	Mass Spec Single Quad Start Up	Start Make Up Pump	VERITY 1900 Splitter Settings	

151/152 Detector Tasks

The table below lists the tasks for the 151 and 152 UV/VIS Detectors.

	GILSON TASK NAME AND DESCRIPTION
	151 152 Detector Settings This task sets the peak width, wavelength, and sensitivities for the 151 or 152 UV/VIS Detector.
	Detector Autozero Channel This task sets the signal of each channel on the selected Detector to zero.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Set Detector Mode This task sets the detection mode on a 155 or 156 UV/VIS Detector.
	Set Peak Width This task sets the Peak Width and Mode on the selected Detector.
	Set Sensitivity This task sets the sensitivities for monitoring a sample on separate output channels on the selected Detector.
	Set Wavelength This task sets the wavelengths to be monitored based on the selected mode for the selected Detector.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Turn Lamp Off This task turns off power to the lamps while maintaining power to the Detector.
	Turn Lamp On This task turns the UV and visible lamps on for the specified Detector.
	Write to Display This task displays a message in the front panel display of the selected instrument. Note: Write to Display is only available for the 151 Detector, as the 152 Detector does not have a front panel display.

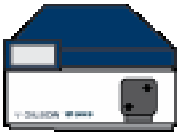
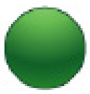
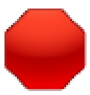
155/156 Detector Tasks

The table below lists the tasks for the 155 and 156 UV/VIS Detectors.

	GILSON TASK NAME AND DESCRIPTION
	155 156 Detector Settings This task sets the mode, peak width, sensitivities, and wavelengths for the 155 or 156 UV/VIS Detector.
	155 156 Scan Initiation This task sets the 155 or 156 UV/VIS Detector for an automatic scan.
	Detector Autozero Channel This task sets the output trace of each channel on Detector to zero.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Set Detector Mode This task sets the detection mode on a 155 or 156 UV/VIS Detector.
	Set Peak Width This task sets the Peak Width and Mode on the selected Detector.
	Set Sensitivity Sets the sensitivities for monitoring a sample on separate output channels on the selected Detector.
	Set Wavelength Sets the wavelengths to be monitored based on the selected mode for the selected Detector.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Turn Lamp Off This task turns off power to the lamps while maintaining power to the Detector.
	Turn Lamp On This task turns the UV and visible lamps on for the specified Detector.
	Write to Display This task displays a message in the front panel display of the selected instrument. Note: Write to Display is only available for the 155 Detector, as the 156 Detector does not have a front panel display

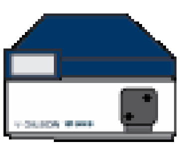
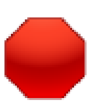
157 Detector Tasks

The table below lists the tasks for the 157 Detector.

	GILSON TASK NAME AND DESCRIPTION
	157 Detector Settings This task sets the wavelength, for the 157 Detector.
	Detector Autozero Channel This task sets the signal of each channel on the selected Detector to zero.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Turn Lamp Off This task turns off power to the lamps while maintaining power to the Detector.
	Turn Lamp On This task turns the UV and visible lamps on for the specified Detector.

159 Detector Tasks

The table below lists the tasks for the 159 Detector.

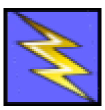
	GILSON TASK NAME AND DESCRIPTION
	159 Detector Settings This task sets the wavelengths for the 159 Detector.
	Detector Autozero Channel This task sets the signal of each channel on the selected Detector to zero.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.

159 DETECTOR TASKS CONTINUED ON PAGE 239

	GILSON TASK NAME AND DESCRIPTION
	Turn Lamp Off This task turns off power to the lamps while maintaining power to the Detector.
	Turn Lamp On This task turns the UV and visible lamps on for the specified Detector.

171/172 Diode Array Detector Tasks

The table below lists the tasks for the 171 and 172 Diode Array Detectors.

	GILSON TASK NAME AND DESCRIPTION
	171 172 Detector Settings This task sets the DAD wavelengths and bandwidths to be monitored based on each selected Channel for the selected Detector.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Turn Lamp Off This task turns off power to the lamps while maintaining power to the Detector.
	Turn Lamp On This task turns the UV and visible lamps on for the specified Detector.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

202C Fraction Collector Tasks

The table below lists the tasks for the 202C Fraction Collector.

	GILSON TASK NAME AND DESCRIPTION
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Fraction Collector This task homes the specified Fraction Collector.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.

215 Liquid Handler and 215 Liquid Handler without Pump Tasks

The table below lists the tasks for the 215 Liquid Handler and 215 Liquid Handler without Pump.

	GILSON TASK NAME AND DESCRIPTION
	215 819 Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	215 819 Partial Loop Injection This task performs a partial loop injection.
	215 819 Prep Injection with Collection This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	845Z Prep Injection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.
	845Z Prep Injection with Collection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.

215 LIQUID HANDLER AND 215 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 242

	GILSON TASK NAME AND DESCRIPTION
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve and probe for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	High Mount Fraction Collection Valve Flush This task rinses the fraction collection valve and probe for a user-specified duration.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.

215 LIQUID HANDLER AND 215 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 243

	GILSON TASK NAME AND DESCRIPTION
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.
	Write to Display This task displays a message in the front panel display of the selected instrument.

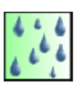
206/FC 203B/FC 204/prepFC Fraction Collector Tasks

The table below lists the tasks for the FC 203B, FC 204, 206, and PrepFC Fraction Collectors.

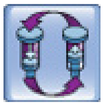
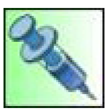
	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Fraction Collector This task homes the specified Fraction Collector.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

231/232 XL Sample Injector Tasks

The table below lists the tasks for the 231 and 232 XL Sample Injectors.

	GILSON TASK NAME AND DESCRIPTION
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.

231/232 XL SAMPLE INJECTOR TASKS CONTINUED ON PAGE 246

	GILSON TASK NAME AND DESCRIPTION
	**Prime Dilutor** This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.
	XL Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	XL Partial Loop Injection This task performs a partial loop injection.
	XL Total Loop Injection This task performs a total loop injection.

233 XL Sample Injector Tasks

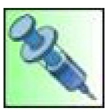
The table below lists the tasks for the 233 XL Sample Injector.

	GILSON TASK NAME AND DESCRIPTION
	233 XL Prep Injection with Collection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Fraction Collector This task homes the specified Fraction Collector.
	Home Liquid Handler This task homes the specified liquid handler.

233 XL SAMPLE INJECTOR TASKS CONTINUED ON PAGE 248

	GILSON TASK NAME AND DESCRIPTION
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.

233 XL SAMPLE INJECTOR TASKS CONTINUED ON PAGE 249

	GILSON TASK NAME AND DESCRIPTION
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.
	XL Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	XL Partial Loop Injection This task performs a partial loop injection.
	XL Total Loop Injection This task performs a total loop injection.

234 Autoinjector Tasks

The table below lists the tasks for the 234 Autoinjector.

	GILSON TASK NAME AND DESCRIPTION
	234 Partial Loop Injection This task performs a partial loop injection.
	234 Total Loop Injection This task performs a total loop injection.
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.

234 AUTOINJECTOR TASKS CONTINUED ON PAGE 250

	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.

234 AUTOINJECTOR TASKS CONTINUED ON PAGE 251

	GILSON TASK NAME AND DESCRIPTION
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

235 Autoinjector Tasks

The table below lists the tasks for the 235 Autoinjector.

	GILSON TASK NAME AND DESCRIPTION
	235S Partial Loop Injection This task performs a partial loop injection.
	235S Total Loop Injection This task performs a total loop injection.
	235T Injection Rinse This task is used to rinse the injection port on a 235 Autoinjector with tee injection port.
	235T Partial Loop Injection This task performs a partial loop injection on a 235 Autoinjector with a tee injection port.
	235T Total Loop Injection This task performs a total loop injection on a 235 Autoinjector with tee injection port.
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.

235 AUTOINJECTOR TASKS CONTINUED ON PAGE 252

	GILSON TASK NAME AND DESCRIPTION
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

305/307 Pump Tasks

The table below lists the tasks for the 305 and 307 Pumps.

	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

306 Pump Tasks

The table below lists the task for the 306 Pump.

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.

307 Make Up Pump Tasks

The table below lists the tasks for the 307 Make Up Pump.

	GILSON TASK NAME AND DESCRIPTION
	Start Make Up Pump This task starts flow from the specified make up pump.
	Stop Make Up Pump This task stops flow from the specified make up pump.

321 HPLC Pump Tasks

The table below lists the tasks for the 321 HPLC Pump.

	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Solvent Valve Position This task switches the solvent valve on the specified pump.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

322 HPLC Pump Tasks

The table below lists the tasks for the 322 HPLC Pump.

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Solvent Valve Position This task switches the solvent valve on the specified pump.

402 Syringe Pumps and GX Syringe Pump Tasks

The table below lists the tasks for the 402 Syringe Pumps and GX Syringe Pump.

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.

331/333 Prep-Scale HPLC Pump Tasks

The table below lists the tasks for the 331 and 333 Prep-Scale HPLC Pumps.

	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Solvent Valve Position This task switches the solvent valve on the specified pump.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

332/334 Prep-Scale HPLC Pump Tasks

The table below lists the tasks for the 332 and 334 Prep-Scale HPLC Pumps.

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Solvent Valve Position This task switches the solvent valve on the specified pump.

506C System Interface Tasks

The table below lists the tasks for the 506C System Interface.

	GILSON TASK NAME AND DESCRIPTION
	506C Autozero Channel This task sets the output trace of the specified channels on the System Interface to zero.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

606 GSIOC to RS-232 Converter Tasks

The table below lists the task for the 606 GSIOC to RS-232 Converter.

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.

819 Injection Module Tasks

The table below lists tasks for the 819 Injection Module.

	GILSON TASK NAME AND DESCRIPTION
	215 819 Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	215 819 Partial Loop Injection This task performs a partial loop injection.
	215 819 Prep Injection with Collection This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.

845Z Injection Module Tasks

The table below lists tasks for the 845Z Injection Module.

	GILSON TASK NAME AND DESCRIPTION
	845Z Prep Injection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.
	845Z Prep Injection with Collection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and rinses the low pressure fraction collection valve.

845Z INJECTION MODULE TASKS CONTINUED ON PAGE 257

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.

Auxiliary Tasks

The table below lists the tasks for Auxiliary.

	GILSON TASK NAME AND DESCRIPTION
	Execute This task invokes an external application.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Log Variables This task records the values used for local and global variables during a run and stores them in a spreadsheet.
	Prompt This task displays a prompt dialog with the selected message.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Wait Time This task waits a specified length of time and displays an optional message. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait
	Sync This task coordinates steps in a task with a time in a method.
	Conditional Fraction Collection This task can be used in place of the Fraction Collection Settings task. It allows for setting multiple parameters for one or more channels at once.

Flexar SQ 300 MS Detector Tasks

The table below lists the tasks for the Flexar SQ 300 MS Detector.

	GILSON TASK NAME AND DESCRIPTION
	Mass Spec Auto Tune This task tunes the Flexar SQ 300 MS Detector across a specified mass range using a specified tune mix. Run this task using manual control (NOT as part of a method).
	Mass Spec Check Tune This task verifies that the Flexar SQ 300 MS Detector is tuned across a specified mass range using a specified tune mix. Run this task using manual control (NOT as part of a method).
	Mass Spec Single Quad APCI Settings This task changes the corona currents used when collecting data.
	Mass Spec Single Quad Settings This task sets the data collection parameters for each selected channel for the Flexar SQ 300 MS Detector.
	Mass Spec Single Quad Standby This task puts the Flexar SQ 300 MS Detector in standby.
	Mass Spec Single Quad Start Up This task sets the dry gas flow and temperature, the nebulizer gas pressure, and the APCI vaporizer temperature (if applicable) on the Flexar SQ 300 MS Detector.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.

Fraction Collection System Tasks

The table below lists the tasks for the Fraction Collection System.

	GILSON TASK NAME AND DESCRIPTION
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Fraction Collector This task homes the specified Fraction Collector.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.

GX-241 II Liquid Handler without Pump Tasks

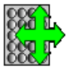
The table below lists the tasks for the GX-241 II Liquid Handler without Pump.

	GILSON TASK NAME AND DESCRIPTION
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.

GX-241 II LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 260

	GILSON TASK NAME AND DESCRIPTION
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.

GX-241 II LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 261

	GILSON TASK NAME AND DESCRIPTION
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	Partial Loop Injection This task performs a partial loop injection.
	Prep Injection with Collection This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.
	Total Loop Injection Overfill This task performs a total loop injection.

GX-241 II LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 262

	GILSON TASK NAME AND DESCRIPTION
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

GX-271 Analytical/GX-271 Prep Liquid Handler Tasks

The table below lists the tasks for the GX-271 Analytical Liquid Handler and GX-271 Prep Liquid Handler.

	GILSON TASK NAME AND DESCRIPTION
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	GX Add Diluent This task aspirates the specified liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	GX Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	GX Home Liquid Handler This task homes a GX-Series liquid handler and GX Solvent System.

GX-271 ANALYTICAL/GX-271 PREP LIQUID HANDLER TASKS CONTINUED ON PAGE 263

	GILSON TASK NAME AND DESCRIPTION
	GX Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe into the injection port prior to rinsing.
	GX Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	GX Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	GX Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	GX Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	GX Prime This task primes the transfer tubing. It dispenses the transfer tubing capacity from the reservoir to the specified wells in the specified zone for the number of cycles.
	GX Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	GX-271 Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	GX-271 Partial Loop Injection This task performs a partial loop injection.
	GX-271 Prep Injection with Collection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	GX-271 Prep Injection with Collection High Mount This task is used when doing injection and fraction collection on the same bed. It rinses the probe and then it performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop. It includes a rinse of the fraction collection valve for a user-defined duration after the injection.
	GX-271 Total Loop Injection This task performs a total loop injection.
	GX-271 Total Loop Injection Overfill This task performs a total loop injection.
	High Mount Fraction Collection Valve Flush This task rinses the fraction collection valve and probe for a user-specified duration.

GX-271 ANALYTICAL/GX-271 PREP LIQUID HANDLER TASKS CONTINUED ON PAGE 264

	GILSON TASK NAME AND DESCRIPTION
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait..

GX-271 Liquid Handler without Pump Tasks

The table below lists the tasks for the GX-271 Liquid Handler without Pump.

	GILSON TASK NAME AND DESCRIPTION
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.

GX-271 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 265

	GILSON TASK NAME AND DESCRIPTION
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	High Mount Fraction Collection Valve Flush This task rinses the fraction collection valve and probe for a user-specified duration.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.

GX-271 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 266

	GILSON TASK NAME AND DESCRIPTION
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	Partial Loop Injection This task performs a partial loop injection.
	Prep Injection with Collection This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	Prep Injection with Collection High Mount This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve for a user-defined duration.
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.

GX-271 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 267

	GILSON TASK NAME AND DESCRIPTION
	Total Loop Injection Overfill This task performs a total loop injection.
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

GX-281 Analytical/GX-281 Prep Liquid Handler Tasks

The table below lists the tasks for the GX-281 Analytical Liquid Handler and GX-281 Prep Liquid Handler.

	GILSON TASK NAME AND DESCRIPTION
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.

GX-281 ANALYTICAL/GX-281 PREP LIQUID HANDLER TASKS CONTINUED ON PAGE 268

	GILSON TASK NAME AND DESCRIPTION
	GX Add Diluent This task aspirates the specified liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	GX Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	GX Home Liquid Handler This task homes a GX-Series liquid handler and GX Solvent System.
	GX Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe into the injection port prior to rinsing.
	GX Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	GX Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	GX Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	GX Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.
	GX Prime This task primes the transfer tubing. It dispenses the transfer tubing capacity from the reservoir to the specified wells in the specified zone for the number of cycles.
	GX Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	GX-281 Low Volume Partial Loop Injection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	GX-281 Partial Loop Injection This task performs a partial loop injection.
	GX-281 Prep Injection with Collection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.

GX-281 ANALYTICAL/GX-281 PREP LIQUID HANDLER TASKS CONTINUED ON PAGE 269

	GILSON TASK NAME AND DESCRIPTION
	GX-281 Rack Scan This task scans the racks on the locator plate of the GX-281 Liquid Handler for the purpose of ensuring that the rack hardware setup matches the software rack (bed layout) setup.
	GX-281 Total Loop Injection This task performs a total loop injection.
	GX-281 Z Inject Prep Injection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.
	GX-281 Z Inject Prep Injection with Collection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.

GX-281 ANALYTICAL/GX-281 PREP LIQUID HANDLER TASKS CONTINUED ON PAGE 270

	GILSON TASK NAME AND DESCRIPTION
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.
	Write to Display This task displays a message in the front panel display of the selected instrument.

GX-281 Liquid Handler without Pump Tasks

The table below lists the tasks for the GX-281 Liquid Handler without Pump.

	GILSON TASK NAME AND DESCRIPTION
	Add Diluent This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.
	Aspirate This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the Move to Sample Location task to move the probe to the well before aspirating liquid.
	Collection and Travel Depth This task customizes probe (used as a dispense needle) movement during fraction collection.
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Dilute This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.
	Dispense This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.
	Fraction Collection Settings This task sets all parameters for fraction collection.
	Fraction Collection Valve Rinse This task rinses the fraction collection valve for a user-specified duration.
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	GX-281 Rack Scan This task scans the racks on the locator plate of the GX-281 Liquid Handler for the purpose of ensuring that the rack hardware setup matches the software rack (bed layout) setup.

GX-281 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 271

	GILSON TASK NAME AND DESCRIPTION
	GX-281 w-o pump Low Volume Partial Loop Inject This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.
	GX-281 w-o pump Partial Loop Injection This task performs a partial loop injection.
	GX-281 w-o pump Prep Inject with Collect This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	GX-281 w-o pump Total Loop Injection This task performs a total loop injection.
	GX-281 w-o pump Z Inject Prep Inj with Collect This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and includes a rinse of the fraction collection valve.
	GX-281 w-o pump Z Inject Prep Injection This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.
	Home Liquid Handler This task homes the specified liquid handler.
	Injection Rinse This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.
	Injection Valve Position This task sets the injection valve position on the Injector to either LOAD or INJECT.
	Inside Rinse This task moves to the rinse station and then rinses the inside of the probe.
	Mix with Air This task aspirates air and then dispenses it into a well a specified number of times.
	Mix with Liquid This task aspirates liquid and then dispenses it into a well a specified number of times.
	Move to Sample Location This task moves the probe to a specified height in a specified well in a specified zone.
	Outside Rinse This task moves to the rinse station and then rinses the outside of the probe.

GX-281 LIQUID HANDLER WITHOUT PUMP TASKS CONTINUED ON PAGE 272

	GILSON TASK NAME AND DESCRIPTION
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.
	Set Fraction Site This task identifies where fraction collection will begin for an injected sample.
	Set Multiple Bed Collection This task is used to set the fraction site when multiple fraction collectors are being used.
	Set Non Peak Per Tube This task sets parameters for collecting non-peaks.
	Set Peak Level This task sets the parameters for fraction collection by level.
	Set Peak Per Tube This task sets parameters for collecting peaks.
	Set Peak Slope This task sets the parameters for fraction collection by slope.
	Start Fraction Collection This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.
	Stop Fraction Collection This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.
	Transfer This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.
	Write to Display This task displays a message in the front panel display of the selected instrument.

MRA Splitter Tasks

The table below lists the tasks for the MRA Splitter.

	GILSON TASK NAME AND DESCRIPTION
	MRA Splitter Set Split Ratio This task readies the splitter for operation.
	MRA Splitter Start Splitter This task starts the splitter. Be sure to first specify the settings using the MRA Splitter Set Split Ratio task.
	MRA Splitter Stop Splitter This task stops the splitter.

VALVEMATE®/VALVEMATE® II Tasks

The table below lists the tasks for the VALVEMATE and VALVEMATE II.

	GILSON TASK NAME AND DESCRIPTION
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Switch VALVEMATE This task changes the valve position on a VALVEMATE or VALVEMATE II.

VERITY 1741 UV-VIS Detector Tasks

The table below lists the tasks for the VERITY 1741 Detector.

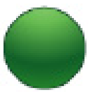
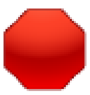
	GILSON TASK NAME AND DESCRIPTION
	Detector Autozero Channel This task sets the signal of each channel on the selected Detector to zero.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Turn Lamp Off This task turns off power to the lamps while maintaining power to the Detector.

VERITY 1741 UV-VIS DETECTOR TASKS CONTINUED ON PAGE 274

	GILSON TASK NAME AND DESCRIPTION
	Turn Lamp On This task turns the UV and visible lamps on for the specified Detector.
	VERITY 1741 UV-VIS-DAD Detector Settings This task sets the data collection parameters for each selected channel for the VERITY 1741 Detector.

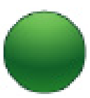
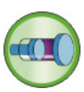
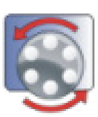
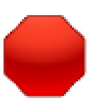
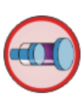
VERITY 1810 Conductivity and pH Monitor Tasks

The table below lists the tasks for the VERITY 1810 Conductivity and pH Monitor.

	GILSON TASK NAME AND DESCRIPTION
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.

VERITY 1900 MS Detector Tasks

The table below lists the tasks for the VERITY 1900 MS Detector.

	GILSON TASK NAME AND DESCRIPTION
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Start VERITY 1900 Make Up Pump This task starts flow from the specified make up pump.
	Start VERITY 1900 Splitter This task starts the splitter. Be sure to first specify the settings using the VERITY 1900 Splitter Settings task.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Stop VERITY 1900 Make Up Pump This task stops flow from the specified make up pump.
	Stop VERITY 1900 Splitter This task stops the splitter.

VERITY 1900 MS DETECTOR TASKS CONTINUED ON PAGE 275

	GILSON TASK NAME AND DESCRIPTION
	VERITY 1900 Auto Tune This task calibrates the VERITY 1900 MS Detector across a specified mass range. Run this task using manual control (NOT as part of a method).
	VERITY 1900 MS Detector Settings This task sets the data collection parameters for each selected channel for the VERITY 1900 MS Detector.
	VERITY 1900 MS Detector Standby This task puts the VERITY 1900 MS Detector in standby.
	VERITY 1900 Splitter Settings This task readies the splitter for operation.

VERITY 1910 MS Detector Tasks

The table below lists the tasks for the VERITY 1910 MS Detector.

	GILSON TASK NAME AND DESCRIPTION
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Start VERITY 1910 Make Up Pump This task starts flow from the specified make up pump.
	Start VERITY 1910 Splitter This task starts the splitter. Be sure to first specify the settings using the VERITY 1910 Splitter Settings task.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Stop VERITY 1910 Make Up Pump This task stops flow from the specified make up pump.
	Stop VERITY 1910 Splitter This task stops the splitter.
	VERITY 1910 Auto Tune This task calibrates the VERITY 1910 MS Detector across a specified mass range. Run this task using manual control (NOT as part of a method).
	VERITY 1910 MS Detector Settings This task sets the data collection parameters for each selected channel for the VERITY 1910 MS Detector.

	VERITY 1910 MS Detector Standby This task puts the VERITY 1900 MS Detector in standby.
	VERITY 1910 Splitter Settings This task readies the splitter for operation.

VERITY 1920 MS Detector Tasks

The table below lists the tasks for the VERITY 1920 MS Detector.

	GILSON TASK NAME AND DESCRIPTION
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	VERITY 1920 Auto Tune This task calibrates the VERITY 1920 MS Detector across a specified mass range. Run this task using manual control (NOT as part of a method).
	VERITY 1920 MS Detector Settings This task sets the data collection parameters for each selected channel for the VERITY 1920 MS Detector.
	VERITY 1920 MS Detector Positive/Negative Settings This task sets the data collection parameters for each selected channel for the VERITY 1920 MS Detector and allows setting positive/negative polarity independently for each channel, whereas the VERITY 1920 MS Detector Settings task only allows setting positive/negative polarity for all channels (all positive or all negative). Only one settings task should be used in a method. When performing positive/negative scan switching, collecting positive scan data on channel 1 and negative scan data on channel 2, SIM data cannot be collected; however, target mass data can be collected
	VERITY 1920 MS Detector Standby This task puts the VERITY 1920 MS Detector in standby.
	VERITY 1920 MS Detector Start Up This task sets the temperature and voltage on the VERITY 1920 MS.

VERITY 3011 Make Up Pump Tasks

The table below lists the tasks for the VERITY 3011 Make Up Pump.

	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Prime Make Up Pump This task primes the make up pump at the specified flow rate. Ensure the purge valve is open before running the task. Run the Stop Make Up Pump task to stop priming.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Start Make Up Pump This task starts flow from the specified make up pump.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Stop Make Up Pump This task stops flow from the specified make up pump.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

VERITY 3011 Pump Tasks

The table below lists the tasks for the VERITY 3011 Pump.

	GILSON TASK NAME AND DESCRIPTION
	Contact Open-Close This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.

	Wait for Contact This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

VERITY 3240 Pump Tasks

The table below lists the tasks for the VERITY 3240 Pump.

	GILSON TASK NAME AND DESCRIPTION
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.
	VERITY 3240 Solvent Valve Position This task switches the solvent valve on the specified pump head.

VERITY Syringe Pumps Tasks

The table below lists the tasks for the VERITY Syringe Pumps.

	GILSON TASK NAME AND DESCRIPTION
	Prime Dilutor This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.

Virtual Detector Tasks

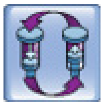
The table below lists the tasks for the Virtual Detector.

	GILSON TASK NAME AND DESCRIPTION
	Start Data Collection This task tells TRILUTION LC to begin collecting data. This task has no properties to set.
	Stop Data Collection This task tells TRILUTION LC to stop collecting data. This task has no properties to set.

Virtual Pumping System Tasks

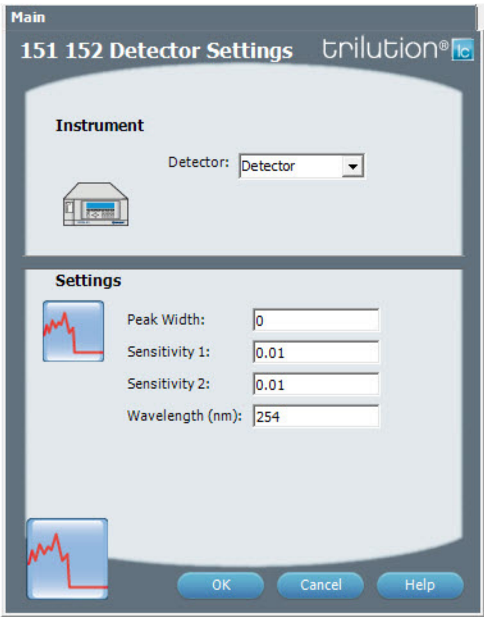
The table below lists the tasks for the Virtual Pumping System.

	GILSON TASK NAME AND DESCRIPTION

	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	**Prime Dilutor** This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified wells in the specified zone for the number of cycles.

151 152 Detector Settings

This task sets the peak width, wavelength, and sensitivities for the 151 or 152 UV/VIS Detector.



For more information about the properties on each tab, refer to:

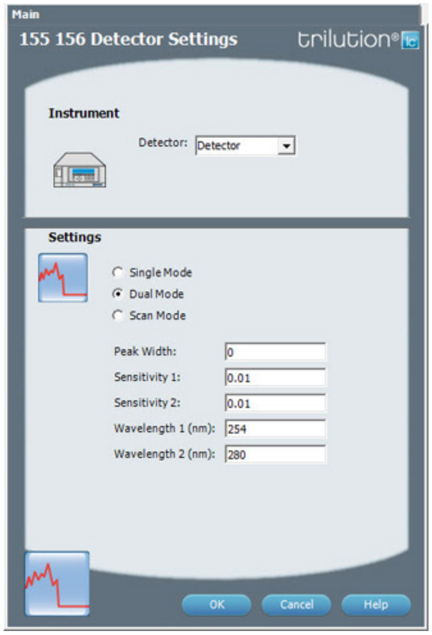
151 152 Detector Settings Properties

151 152 Detector Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Peak Width	The detector must know the width of the narrowest peak in the run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds.	0 sec
Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Wavelength	The monitor wavelength. Valid range is 190–700 nm.	254 nm

155 156 Detector Settings

This task sets the mode, peak width, sensitivities, and wavelengths for the 155 or 156 UV/VIS Detector.



For more information about the properties on each tab, refer to:

155 156 Detector Settings Properties

155 156 Detector Settings Properties

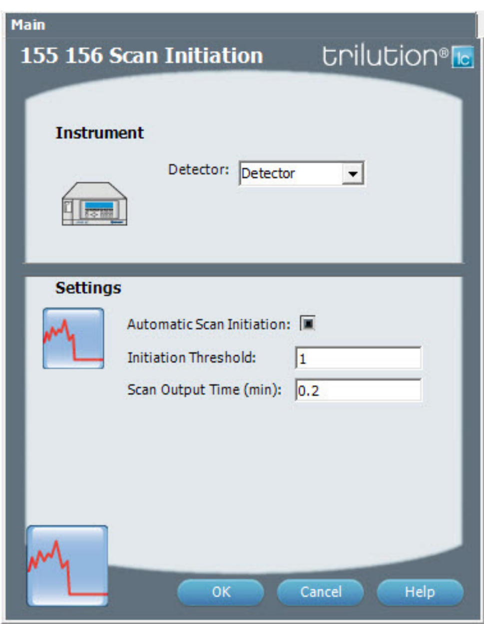
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Detector Mode	Select from Single Mode, Dual Mode, or Scan Mode.	Dual Mode
Single Mode Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds.	0 sec
Single Mode Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Single Mode Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Single Mode Wavelength 1	The monitor wavelength. Valid range is 190–700 nm.	254 nm
Dual Mode Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 4–99.	0 sec
Dual Mode Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS

155 156 DETECTOR SETTINGS PROPERTIES CONTINUED ON PAGE 282

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Dual Mode Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Dual Mode Wavelength 1	The monitor wavelength. Valid range is 190–700 nm.	254 nm
Dual Mode Wavelength 2	The monitor wavelength for output channel 2. Valid range is 190–700 nm.	280 nm
Scan Mode Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds.	0 sec
Scan Mode Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Scan Mode Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01 AUFS
Scan Mode Scan Sensitivity	The sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0.01 AUFS
Scan Mode Scan Wavelength 1	The monitor wavelength. Valid range is 190–700 nm.	254 nm
Scan Mode Scan Start Wavelength	The first wavelength in the range that will be scanned. Valid range is 190–700 nm.	190 nm
Scan Mode Scan End Wavelength	The last wavelength in the range that will be scanned. Valid range is 190–700 nm.	700 nm

155 156 Scan Initiation

This task sets the 155 or 156 UV/VIS Detector for an automatic scan.



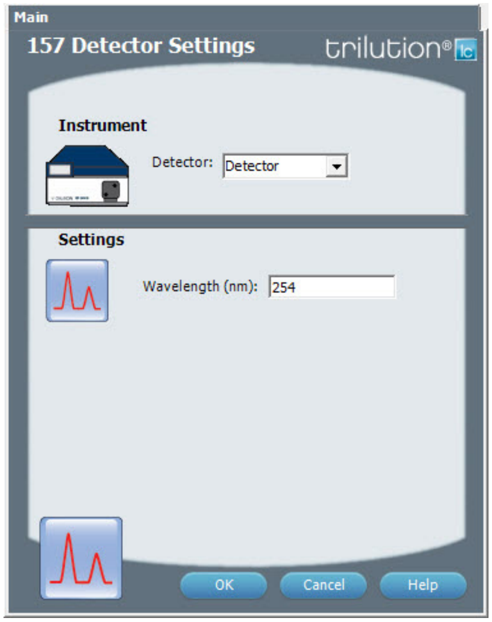
For more information about the properties on each tab, refer to:
155 156 Scan Initiation Properties on page 283

155 156 Scan Initiation Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Automatic Scan Initiation	When automatic scan initiation is selected, the scan is not performed until the absorbance reading reaches the Initiation Threshold.	Selected
Initiation Threshold	The absorbance reading to trigger the Automatic Scan Initiation.	1
Scan Output Time	The time it takes the chart recorder to trace a wavelength scan on strip chart paper (does not affect time to scan a peak). Valid range is 0.1–20 min.	0.2 min

157 Detector Settings

This task sets the wavelength for the 157 Detector.



For more information about the properties on each tab, refer to:

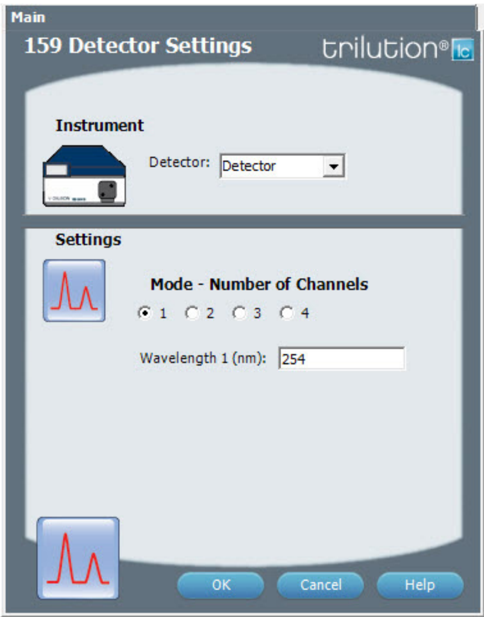
157 Detector Settings Properties

157 Detector Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Wavelength	The monitor wavelength. Valid range is 190 – 750 nm.	254 nm

159 Detector Settings

This task sets the wavelengths for the 159 Detector.



For more information about the properties on each tab, refer to:
159 Detector Settings Properties

159 Detector Settings Properties

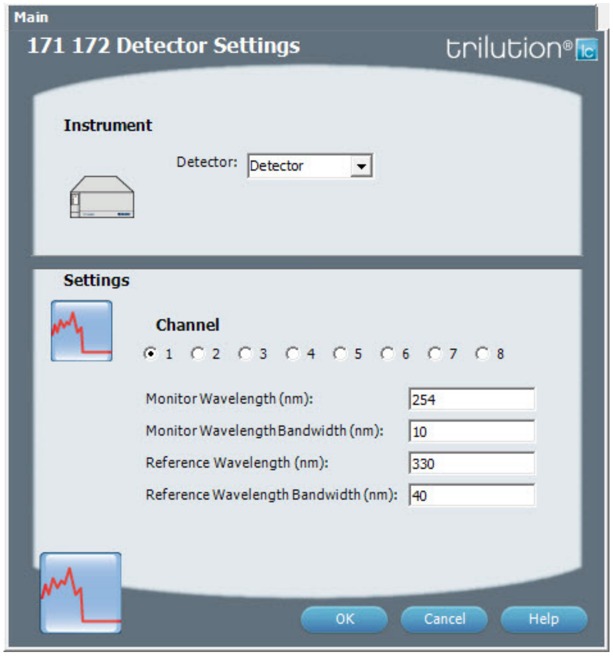
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Mode – Number of Channels	Select the number of channels that will be used to collect data. The number of channels must match the number of 159 Detector channels set to ‘Use’ in the configuration.	1
Mode – Number of Channels = 1 Wavelength 1	The monitor wavelength. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 2 Wavelength 1	The monitor wavelength for channel 1. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 2 Wavelength 2	The monitor wavelength for channel 2. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 3 Wavelength 1	The monitor wavelength for channel 1. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 3 Wavelength 2	The monitor wavelength for channel 2. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 3 Wavelength 3	The monitor wavelength for channel 3. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 4 Wavelength 1	The monitor wavelength for channel 1. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 4 Wavelength 2	The monitor wavelength for channel 2. Valid range is 190–750 nm.	254 nm

159 DETECTOR SETTINGS PROPERTIES CONTINUED ON PAGE 285

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mode – Number of Channels = 4 Wavelength 3	The monitor wavelength for channel 3. Valid range is 190–750 nm.	254 nm
Mode – Number of Channels = 4 Wavelength 4	The monitor wavelength for channel 4. Valid range is 190–750 nm.	254 nm

171 172 Detector Settings

This task sets the DAD wavelengths and bandwidths to be monitored based on each selected channel for the selected Detector.



For more information about the properties on each tab, refer to:

171 172 Detector Settings Properties

171 172 Detector Settings Properties

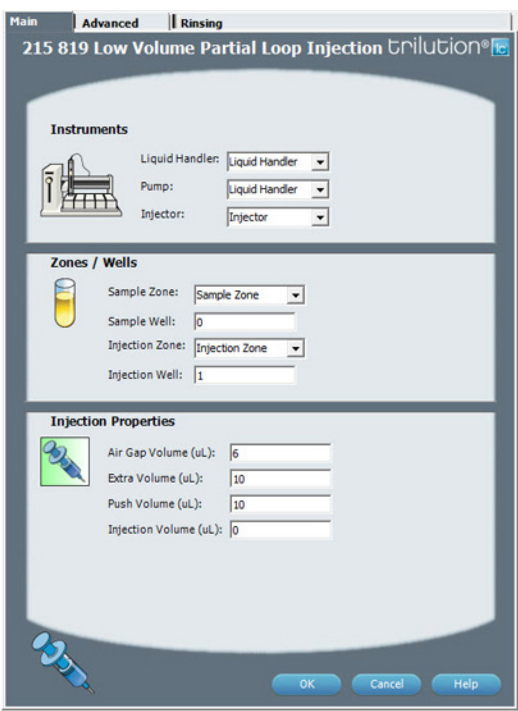
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Channel	Select Channel number for which wavelength and bandwidth values will be set. Repeat for each channel to be used. (1–8)	1
Monitor Wavelength	The wavelength at which chromatogram data will be extracted and displayed on-screen during the run. Range for 171 Diode Array Detector: [Monitor Wavelength - (0.5 x Monitor Wavelength Bandwidth)] > 186 and [Monitor Wavelength + (0.5 x Monitor Wavelength Bandwidth)] < 723 Range for the 172 Diode Array Detector: [Monitor Wavelength - (0.5 x Monitor Wavelength Bandwidth)] > 186 and [Monitor Wavelength + (0.5 x Monitor Wavelength Bandwidth)] < 612	254 nm

171 172 DETECTOR SETTINGS PROPERTIES CONTINUED ON PAGE 286

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Monitor Wavelength Bandwidth	The number of wavelengths that TRILUTION LC will use in the chromatogram calculation for the monitor wavelength. Optimizing the bandwidth improves the signal-to-noise ratio to obtain the optimum signal for peak detection. (Range 1–15 nm, range dependent on setting for Monitor Wavelength)	10 nm
Reference Wavelength	The reference wavelength is used to correct for background noise and instabilities in the detector. Choose a wavelength that is close to the monitor wavelength and in a region of non-absorbance. Range for the 171 Diode Array Detector: [Reference Wavelength - (0.5 x Reference Wavelength Bandwidth)] > 186 and [Reference Wavelength + (0.5 x Reference Wavelength Bandwidth)] < 723 Range for the 172 Diode Array Detector: [Reference Wavelength - (0.5 x Reference Wavelength Bandwidth)] > 186 and [Reference Wavelength + (0.5 x Reference Wavelength Bandwidth)] < 612	330 nm
Reference Wavelength Bandwidth	The reference wavelength bandwidth sets the number of wavelengths that TRILUTION LC will use in the chromatogram calculation for the reference wavelength. Optimizing the bandwidth improves the signal-to-noise ratio to obtain the optimum signal for peak detection. (Range 1–50 nm, range dependent on setting for Reference Wavelength)	40 nm

215 819 Low Volume Partial Loop Injection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

215 819 Low Volume Partial Loop Injection Properties - Main on page 289
215 819 Low Volume Partial Loop Injection Properties - Advanced
215 819 Low Volume Partial Loop Injection Properties - Rinsing
215 819 Low Volume Partial Loop Injection - Sequence of Steps

215 819 Low Volume Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate

3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Aspirate Push Volume at Aspirate Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.

215 819 Low Volume Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the samples list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

215 819 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 289

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	2.2 mm

215 819 Low Volume Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Injector
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

215 819 Low Volume Partial Loop Injection Properties - Rinsing

For information about rinse positions, refer to **Rinse Locations on page 621**.

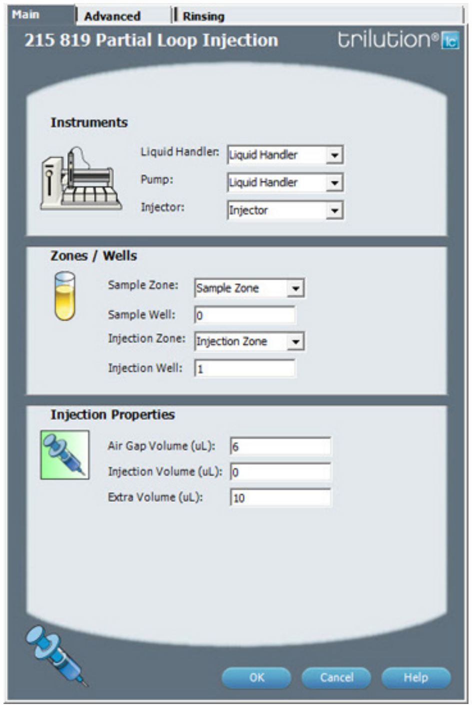
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

215 819 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 290

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	300 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

215 819 Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

215 819 Partial Loop Injection Properties - Main
215 819 Partial Loop Injection Properties - Advanced
215 819 Partial Loop Injection Properties - Rinsing
215 819 Partial Loop Injection - Sequence of Steps

215 819 Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

LIST OF TASKS

4. Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to reservoir.
3. Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Switch dilutor valve to probe.
5. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
6. Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

215 819 Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min

Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	2.2 mm

LIST OF TASKS

215 819 Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect. For this task, select the 819 Injection Module.	Injector
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Injection Volume	The volume of sample to be injected.	0 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL

215 819 Partial Loop Injection Properties - Rinsing

For information about rinse positions, refer to **Rinse Locations on page 621**.

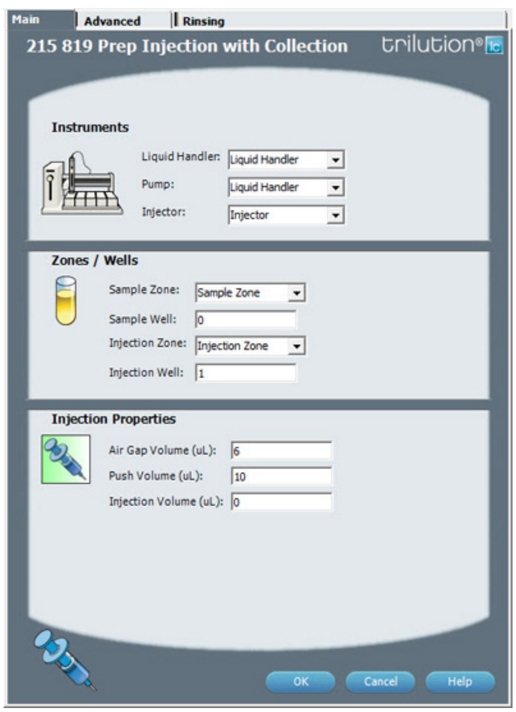
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	300 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL

215 819 PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 295

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

215 819 Prep Injection with Collection

This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

215 819 Prep Injection with Collection Properties - Main on page 298

215 819 Prep Injection with Collection Properties - Advanced

215 819 Prep Injection with Collection Properties - Rinsing

215 819 Prep Injection with Collection - Sequence of Steps

215 819 Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch fraction collection valve to COLLECT for 2 seconds.
6. Lower probe into drain well.
7. Home dilutor.
8. Move Z to Z Safe Height.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Switch dilutor valve to probe and aspirate Injection Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. 2Switch dilutor valve to reservoir.
3. Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Switch dilutor valve to probe.
5. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
6. Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

215 819 Prep Injection with Collection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

215 819 PREP INJECTION WITH COLLECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 298

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	2.2 mm

215 819 Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect. For this task, select the 819 Injection Module.	Injector
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

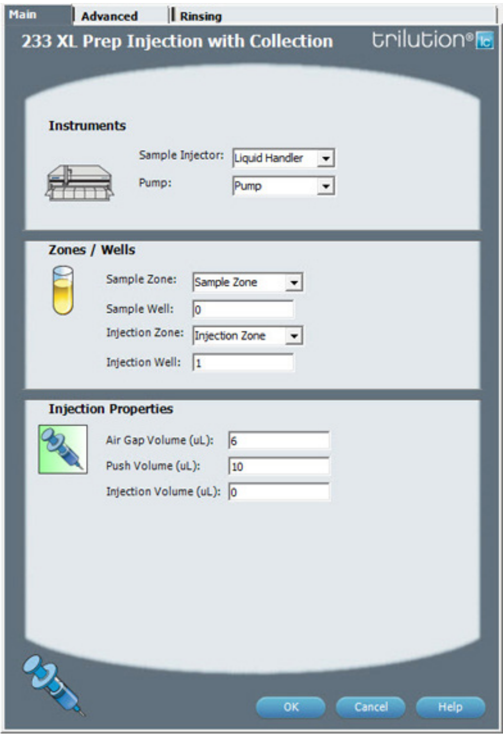
215 819 Prep Injection with Collection Properties - Rinsing

For information about rinse positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	300 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

233 XL Prep Injection with Collection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

233 XL Prep Injection with Collection Properties - Main on page 303
233 XL Prep Injection with Collection Properties - Advanced
233 XL Prep Injection with Collection Properties - Rinsing
233 XL Prep Injection with Collection - Sequence of Steps

233 XL Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Set switching valve to LOAD.
4. Move to Drain Well in Drain Zone.
5. Lower probe into well to Drain Z Option and Drain Z Offset.
6. Home dilutor.
7. Switch fraction collection valve to COLLECT for Fraction Collection Valve Rinse Time.
8. Move Z to Z Safe Height.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Switch dilutor valve to probe and aspirate Injection Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to reservoir and aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
3. Switch dilutor valve to probe and dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir and aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Switch dilutor valve to probe and dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

233 XL Prep Injection with Collection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	2 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.5 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	0 mm

233 XL Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Injector	The sample injector that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Injection Volume and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

233 XL Prep Injection with Collection Properties - Rinsing

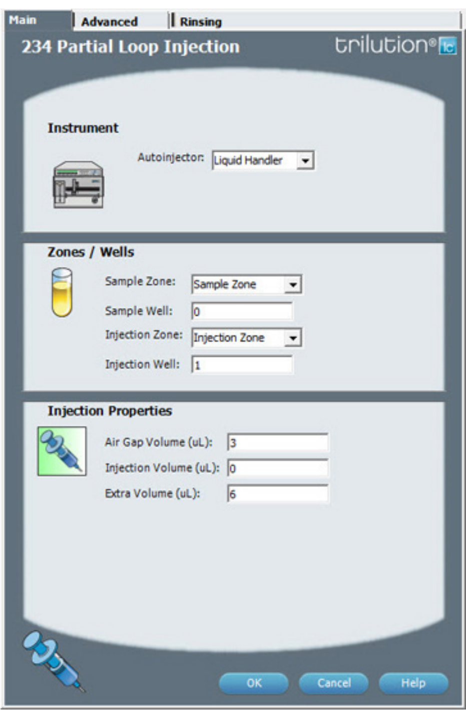
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Fraction Collection Valve Rinse Time	The time the program will wait after switching the fraction collection valve to COLLECT.	0.1 min
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	400 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	10 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL

233 XL PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 304

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

234 Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

234 Partial Loop Injection Properties - Main on page 307
234 Partial Loop Injection Properties - Advanced
234 Partial Loop Injection Properties - Rinsing
234 Partial Loop Injection - Sequence of Steps

234 Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate

3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

7. Aspirate Air Gap Volume at Air Gap Flow Rate.
8. Move to Sample Well in Sample Zone.
9. Lower probe into well to Sample Z Option and Sample Z Offset.
10. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
11. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to reservoir and aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
3. Switch dilutor valve to probe and dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir and aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Switch dilutor valve to probe and dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

234 Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

234 PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 307

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Extra Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	1 mm

234 Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Injection Volume	The volume of sample to be injected.	0 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/ reservoir solvent and the Injection Volume.	6 µL

234 Partial Loop Injection Properties - Rinsing

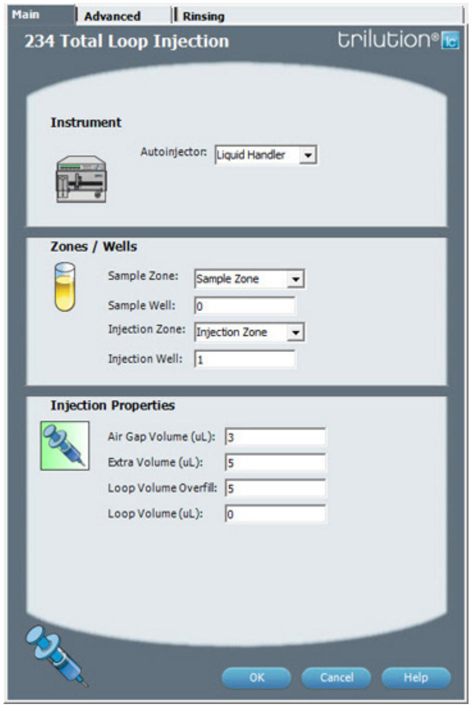
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

234 PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 308

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

234 Total Loop Injection

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

234 Total Loop Injection Properties - Main on page 311

234 Total Loop Injection Properties - Advanced

234 Total Loop Injection Properties - Rinsing

234 Total Loop Injection - Sequence of Steps

234 Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

LIST OF TASKS

4. Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to reservoir and aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
3. Switch dilutor valve to probe and dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir and aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Switch dilutor valve to probe and dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

234 Total Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min

234 TOTAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 311

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Extra Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	1 mm

234 Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone

234 TOTAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 312

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/ reservoir solvent and the Injection Volume.	5 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5
Loop Volume	The capacity of the installed sample loop.	0 µL

234 Total Loop Injection Properties - Rinsing

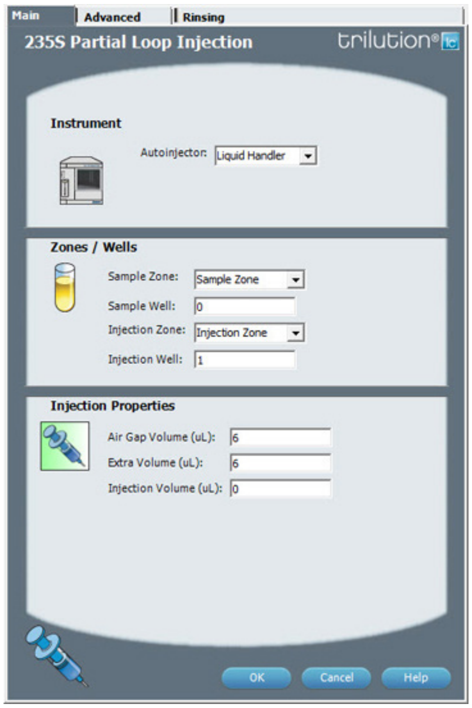
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min

234 TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 313

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

235S Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

235S Partial Loop Injection Properties - Main on page 316
235S Partial Loop Injection Properties - Advanced
235S Partial Loop Injection Properties - Rinsing
235S Partial Loop Injection - Sequence of Steps

235S Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject

4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.

INJECTION PORT RINSE

1. Switch injection valve to INJECT.
2. Home dilutor.
3. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
4. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
5. Repeat steps 3–4 until requested rinse volume is aspirated and dispensed.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Outside Rinse Well in Outside Rinse Zone.

3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
6. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

235S Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm

235S PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 316

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Extra Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm

235S Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Injection Volume	The volume of sample to be injected.	0 µL

235S Partial Loop Injection Properties - Rinsing

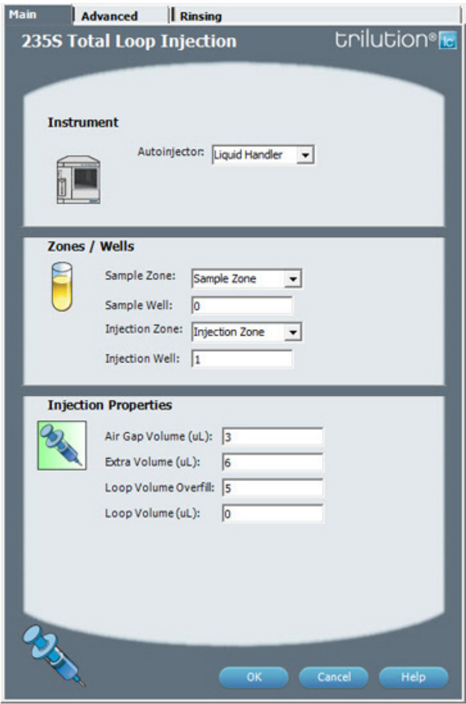
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

235S PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 317

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

235S Total Loop Injection

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

235S Total Loop Injection Properties - Main on page 320

235S Total Loop Injection Properties - Advanced

235S Total Loop Injection Properties - Rinsing

235S Total Loop Injection - Sequence of Steps

235S Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.

INJECTION PORT RINSE

1. Switch injection valve to INJECT.
2. Home dilutor.
3. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
4. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
5. Repeat steps 3–4 until requested rinse volume is aspirated and dispensed.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Outside Rinse Well in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
6. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

235S Total Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min

235S TOTAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 320

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Extra Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm

235S Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL

235S TOTAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 321

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/ reservoir solvent and the Injection Volume.	6 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5 µL
Loop Volume	The capacity of the installed sample loop.	0 µL

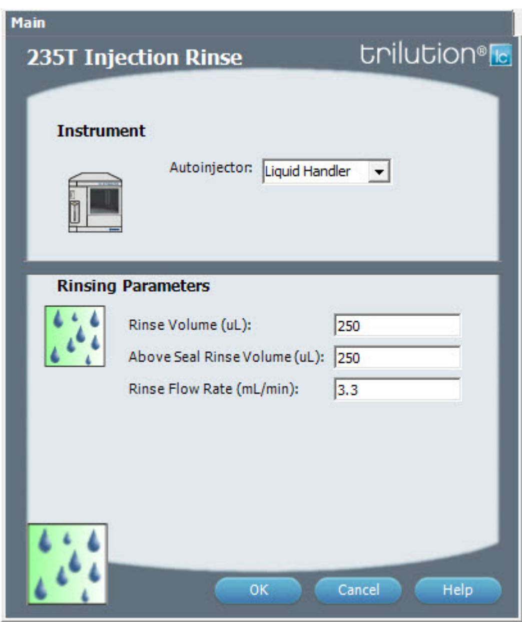
235S Total Loop Injection Properties - Rinsing

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min

235S TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 322

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

235T Injection Rinse



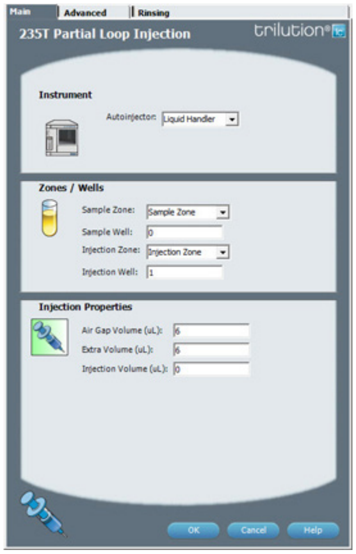
For more information about the properties on each tab, refer to:
235T Injection Rinse Properties on page 322

235T Injection Rinse Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler
Rinse Volume	The quantity of liquid dispensed.	250 µL
Above Seal Rinse Volume	The quantity of liquid dispensed above the seal.	250 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min

235T Partial Loop Injection

This task performs a partial loop injection on a 235 Autoinjector with a tee injection port.



For more information about the properties on each tab, refer to:

235T Partial Loop Injection Properties - Main on page 325

235T Partial Loop Injection Properties - Advanced

235T Partial Loop Injection Properties - Rinsing

235T Partial Loop Injection - Sequence of Steps

235T Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Tee Injection Port Rinse
5. Above Seal Rinse
6. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

LIST OF TASKS

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.

TEE INJECTION PORT RINSE

1. Switch injection valve to INJECT.
2. Home dilutor.
3. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
4. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
5. Repeat steps 3–4 until requested rinse volume is aspirated and dispensed.

ABOVE SEAL RINSE

1. Raise probe to 5 mm above bottom of injection port.
2. Aspirate Above Seal Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Above Seal Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2-3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Outside Rinse Well in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
6. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

235T Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Extra Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm

235T Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler

235T PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 326

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Injection Volume	The volume of sample to be injected.	0 µL

235T Partial Loop Injection Properties - Rinsing

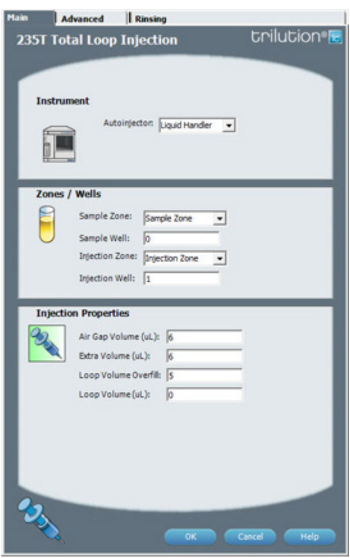
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	200 µL
Above Seal Rinse Volume	The quantity of liquid dispensed above the seal.	200 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	200 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min

235T PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 327

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

235T Total Loop Injection

This task performs a total loop injection on a 235 Autoinjector with tee injection port.



For more information about the properties on each tab, refer to:

235T Total Loop Injection Properties - Main on page 330

235T Total Loop Injection Properties - Advanced

235T Total Loop Injection Properties - Rinsing

235T Total Loop Injection - Sequence of Steps

235T Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Tee Injection Port Rinse
5. Above Seal Rinse
6. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.

TEE INJECTION PORT RINSE

1. Switch injection valve to INJECT.
2. Home dilutor.
3. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
4. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
5. Repeat steps 3–4 until requested rinse volume is aspirated and dispensed.

ABOVE SEAL RINSE

1. Raise probe to 5 mm above bottom of injection port.
2. Aspirate Above Seal Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Above Seal Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Outside Rinse Well in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
6. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

235T Total Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm

235T TOTAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 330

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Extra Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm

235T Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Autoinjector	The autoinjector that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/ reservoir solvent and the Injection Volume.	6 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5
Loop Volume	The capacity of the installed sample loop.	0 µL

235T Total Loop Injection Properties - Rinsing

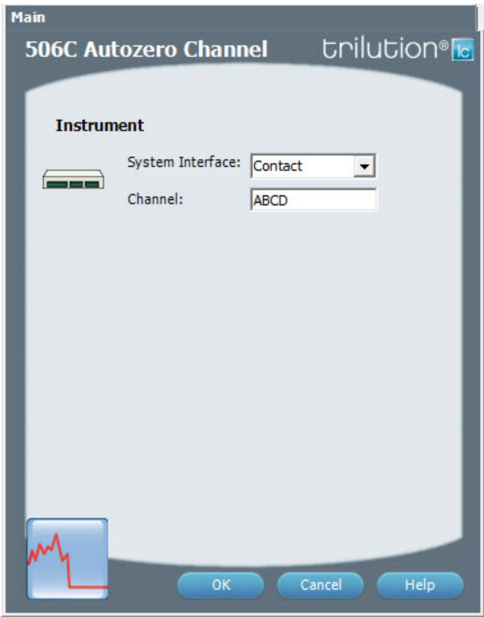
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

235T TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 331

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2 mm
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Above Seal Rinse Volume	The quantity of liquid dispensed above the seal.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

506C Autozero Channel

This task sets the output trace of the specified channels on the system interface to zero.



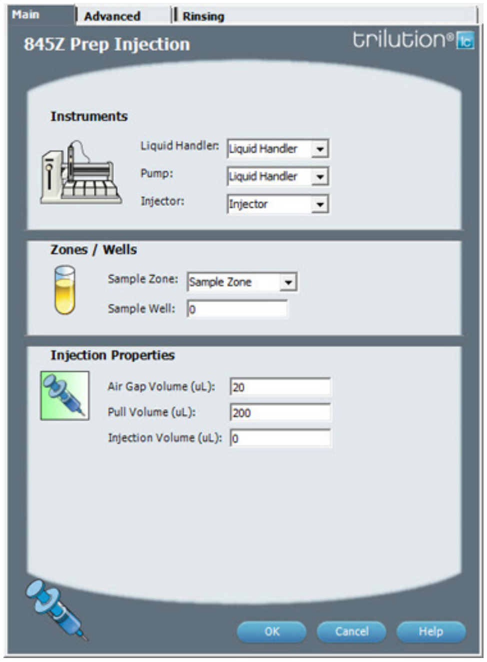
For more information about the properties on each tab, refer to:
506C Autozero Channel Properties

506C Autozero Channel Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
System Interface	The System Interface that the task will affect.	Contact
Channel	Enter the letter or letters that correspond to the output channel to act on for the system interface selected.	ABCD

845Z Prep Injection

This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

845Z Prep Injection Properties - Main on page 335
845Z Prep Injection Properties - Advanced
845Z Prep Injection Properties - Rinsing
845Z Prep Injection - Sequence of Steps

845Z Prep Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Inside Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Move Z to Z Safe Height.

ASPIRATE

1. Switch injection valve to LOAD.
2. Wait 0.2 min.
3. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
4. Move to Sample Well in Sample Zone.

5. Lower probe into well to Sample Z Option and Sample Z Offset.
6. Aspirate Injection Volume at Aspirate Flow Rate.
7. Move Z to Z Safe Height.
8. Aspirate Pull Volume at Aspirate Flow Rate.
9. Wait equilibration time.
10. Synchronize.

INJECT

1. Switch injection valve to INJECT.
2. Move Z to Z Safe Height.

INSIDE RINSE

1. Move to Inside Rinse Well in Inside Rinse Zone.
2. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.
9. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

845Z Prep Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	4 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min

845Z PREP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 335

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

845Z Prep Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect. For this task, select the 845Z Injection Module.	Injector
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	20 µL
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	200 µL Note: This default was determined using a 125 mm Z arm and a 0.8 mm ID probe.
Injection Volume	The volume of sample to be injected.	0 µL

845Z Prep Injection Properties - Rinsing

For information on Rinse Positions, refer to Rinse Locations on page 621.

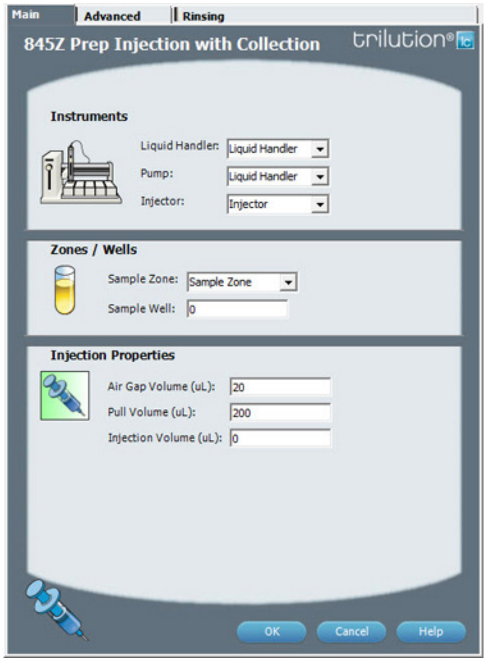
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1

845Z PREP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 336

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

845Z Prep Injection with Collection

This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.



For more information about the properties on each tab, refer to:

845Z Prep Injection with Collection Properties - Main on page 339

845Z Prep Injection with Collection Properties - Advanced

845Z Prep Injection with Collection Properties - Rinsing

845Z Prep Injection with Collection - Sequence of Steps

845Z Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Inside Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Move Z to Z Safe Height.
6. Switch low pressure fraction collection valve to COLLECT for 2 seconds.
7. Switch injection valve to LOAD.
8. Wait 0.2 min.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.
6. Aspirate Pull Volume at Aspirate Flow Rate.
7. Wait equilibration time.
8. Synchronize.

INJECT

1. Switch injection valve to INJECT.
2. Move Z to Z Safe Height.

INSIDE RINSE

1. Move to Inside Rinse Well in Inside Rinse Zone.
2. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.
9. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

845Z Prep Injection with Collection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	4 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

845Z Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect. For this task, select the 845Z Injection Module.	Injector
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	20 µL
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	200 µL Note: This default was determined using a 125 mm Z arm and a 0.8 mm ID probe.
Injection Volume	The volume of sample to be injected.	0 µL

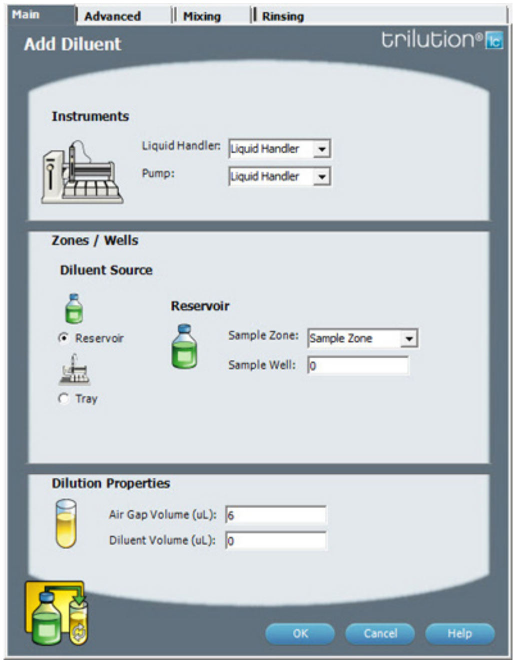
845Z Prep Injection with Collection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Add Diluent

This task aspirates the specified amount of liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.



For more information about the properties on each tab, refer to:

Add Diluent Properties - Main on page 344

Add Diluent Properties - Advanced

Add Diluent Properties - Mixing

Add Diluent Properties - Rinsing

Add Diluent - Sequence of Steps

Add Diluent - Sequence of Steps

The following is an overview for the sequence of steps.

1. Aspirate
2. Dispense
3. Mix with Liquid (Optional)
4. Mix with Air (Optional)
5. Inside Rinse
6. Outside Rinse

ASPIRATE

Move Z to Z Safe Height.

Reservoir

Aspirate Diluent Volume at Aspirate Flow Rate.

Probe

1. Move to Diluent Well in Diluent Zone.
2. Aspirate Air Gap Volume at Air Gap Flow Rate.
3. Lower probe to Aspirate Z Option and Aspirate Z Offset.
4. Aspirate Diluent Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

LIST OF TASKS

DISPENSE

Reservoir

1. Move to Sample Well in Sample Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Dispense Diluent Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.

Probe

Air Gap Volume = 0

1. 1Move to Sample Well in Sample Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Dispense Diluent Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.

Air Gap Volume > 0

1. Move to Sample Well in Sample Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Dispense Diluent Volume and 1/2 Air Gap Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.
5. Move to Inside Rinse Well in Inside Rinse Zone.
6. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
7. Dispense 1/2 Air Gap Volume at Inside Rinse Flow Rate.

MIX WITH LIQUID (OPTIONAL)

1. Move Z to Z Safe Height.
2. Aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset.
5. Aspirate Mixing Volume at Mix Aspirate Flow Rate.
6. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
7. Dispense Mixing Volume at Mix Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

MIX WITH AIR (OPTIONAL)

1. Move Z to Z Safe Height.
2. Move to Sample Well in Sample Zone.
3. Move Z to Z Safe Height.
4. Aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).

5. Aspirate Mixing Volume at Mix Aspirate Flow Rate.
6. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
7. Dispense Mixing Volume at Mix Dispense Flow Rate.
8. Repeat steps 3–7 for Number of Cycles.
9. Move Z to Z Safe Height.

NO MIX
Skip to Inside Rinse.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
6. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Outside Rinse Well in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
6. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

Add Diluent Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min

ADD DILUENT PROPERTIES - ADVANCED CONTINUED ON PAGE 344

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Z Option	One of five defined reference points used when aspirating the Diluent Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Aspirate Z Offset	When selected the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option used when aspirating the Diluent Volume from the bed.	2 mm
Aspirate LLF	When selected the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared and the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	Cleared
Dispense Z Option	One of five defined reference points used when delivering the Diluent Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option used when delivering the Diluent Volume to the bed.	2 mm
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Sample Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Sample Zone.	Cleared

Add Diluent Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Diluent Source	Select Reservoir or Tray.	Reservoir

ADD DILUENT PROPERTIES - MAIN CONTINUED ON PAGE 345

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Reservoir Sample Zone	The zone to which the Diluent Volume is delivered.	Sample Zone
Reservoir Sample Well	Enter the well number in the Sample Zone.	0
Tray Diluent Zone	When Tray is selected; the zone from which the Diluent Volume is aspirated.	Sample Zone
Tray Diluent Well	When Tray is selected; enter the well number in the Diluent Zone.	0
Tray Sample Zone	The zone to which the Diluent Volume is delivered.	Sample Zone
Tray Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	6 µL
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL

Add Diluent Properties - Mixing

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mixing Properties	Select Mix with Liquid or Mix with Air to perform a mix of the Diluent Volume with the Sample Volume. Select No Mix for no mixing.	No Mix
Mix with Liquid Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Liquid Mixing Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Liquid Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	10 mL/min
Mix with Liquid Mix Aspirate Z Option	One of five defined reference points used when aspirating the Mixing Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

ADD DILUENT PROPERTIES - MIXING CONTINUED ON PAGE 346

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Liquid Mix Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm
Mix with Liquid Aspirate LLF	When Tray is selected the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Diluent Zone as part of the mixing process.	Cleared
Mix with Liquid Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Liquid Mix Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared
Mix with Air Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Air Mixing Volume	The quantity of air used as part of a mixing process.	0 µL
Mix with Air Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Air Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	10 mL/min

ADD DILUENT PROPERTIES - MIXING CONTINUED ON PAGE 347

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Air Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Air Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Air Mix Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared

Add Diluent Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

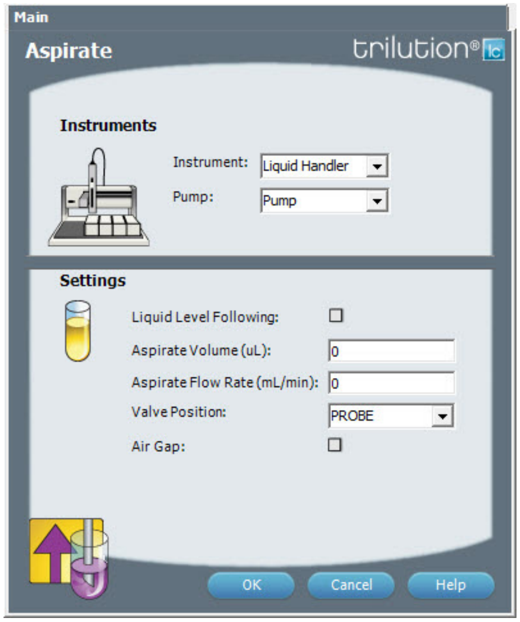
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

ADD DILUENT PROPERTIES - RINSING CONTINUED ON PAGE 348

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Aspirate

This task aspirates an air gap or the specified volume of liquid (Aspirate Volume) from the reservoir or probe and must be synchronized with the **Move to Sample Location** task to move the probe to the well before aspirating liquid.



For more information about the properties on each tab, refer to:

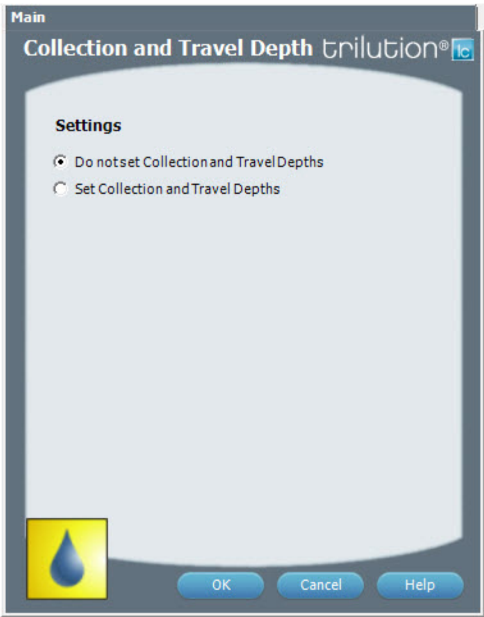
Aspirate Properties on page 349

Aspirate Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. The Z Option in the Move to Sample Location task must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone specified in the Move to Sample Location task.	Cleared
Aspirate Volume	The quantity of liquid or air to be aspirated.	0 µL
Aspirate Flow Rate	The speed at which the volume moves into the probe.	0 mL/min
Valve Position	Select from Probe, Reservoir, or Gas.	PROBE
Air Gap	When selected, indicates that the volume to be aspirated is an air gap.	Cleared

Collection and Travel Depth

This task customizes probe (used as a dispense needle) movement during fraction collection.



For more information about the properties on each tab, refer to:
Collection and Travel Depth Properties on page 350

Collection and Travel Depth Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Settings	Select either Do not set Collection and Travel Depths or Set Collection and Travel Depths.	Do not set Collection and Travel Depths
Set Collection and Travel Depths Fraction Collection Depth	The probe height used when dispensing into fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance or -1, where -1 is equal to the Z Safe Height. Only used when a liquid handler is functioning as a fraction collector.	-1 mm
Set Collection and Travel Depths Fraction Travel Depth	The probe height used when moving between fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance or -1, where -1 is equal to the Z Safe Height. Only used when a liquid handler is functioning as a fraction collector.	-1 mm

Conditional Fraction Collection

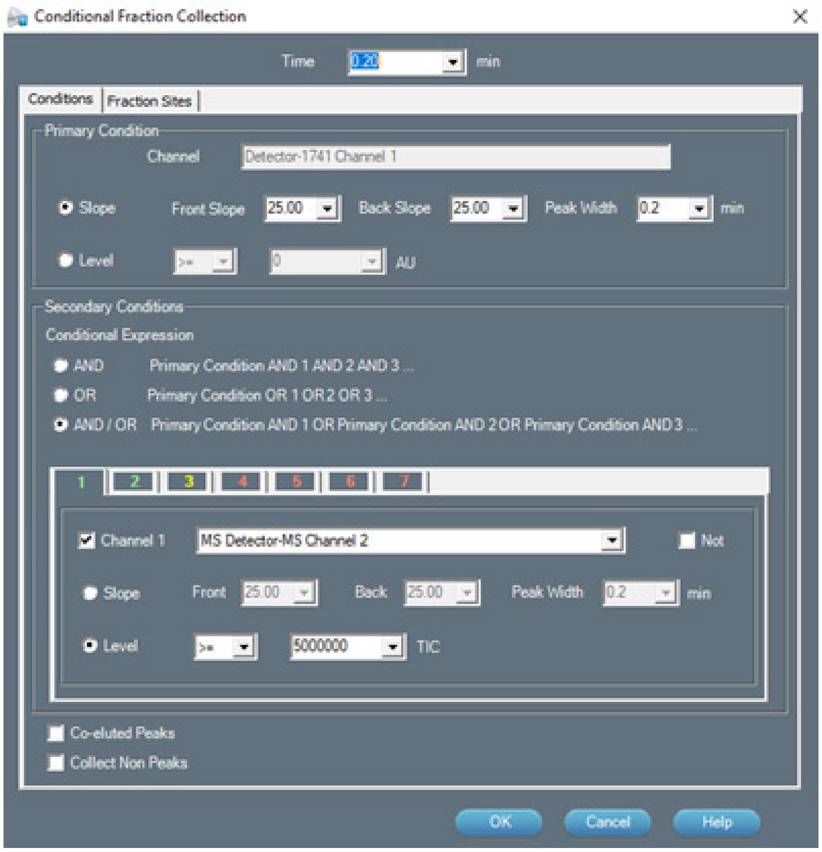
The Conditional Fraction Collection task enables setting up conditional logic fraction collection using data on up to eight channels. This is ideal in a Gilson LC/MS system for using both UV and MS detection to trigger collection. This task can be used in place of the Fraction Collection Settings task.

How to Set Up Conditional Fraction Collection

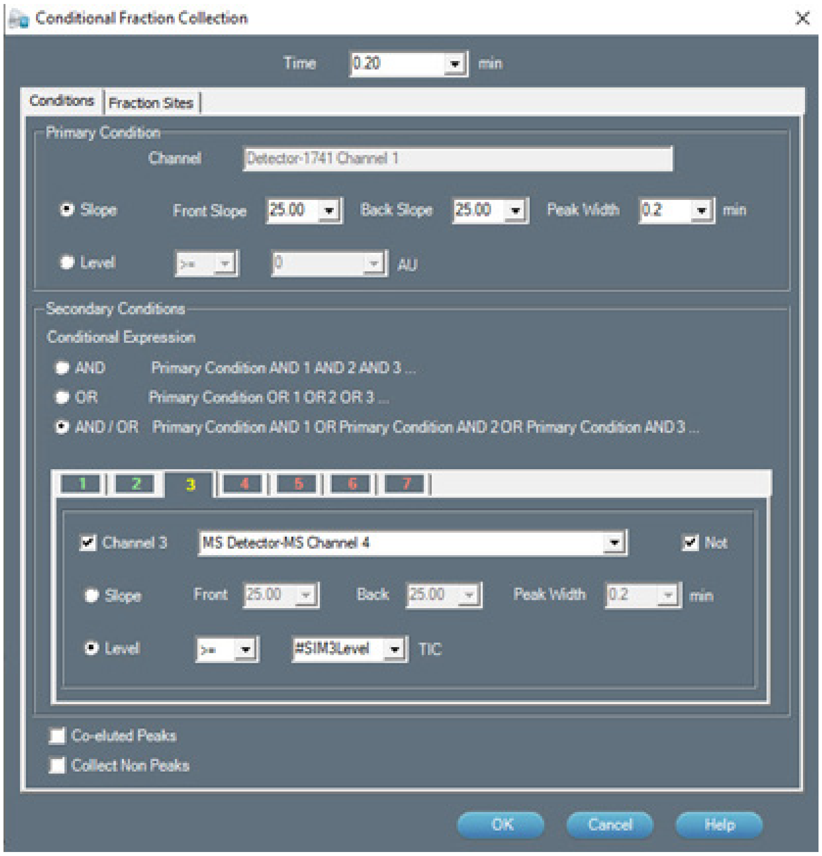
1. Ensure that there are data channels in the configuration that are set for use and that the method contains the Start Data Collection and Stop Data Collection tasks.
2. Drag the Conditional Fraction Collection Task (which is listed under Auxiliary tasks) and drop it in the workspace.
3. Select the primary condition (either slope or level) on the primary channel. Use of a UV channel as the primary channel is recommended.
4. Select the AND option button to indicate that fraction collection will occur when the condition on the primary channel is met AND the condition on all secondary conditions are met.

   Alternatively, select the OR option button to indicate that fraction collection will occur when the condition on the primary channel is met OR any secondary condition is met.

   Alternatively, select the AND/OR option button to indicate that fraction collection will occur when the condition on the primary channel is met AND any secondary condition is met.



5. Set conditions on up to seven additional channels using the tabs. The text color of the tab number changes from red to green when a channel has been selected and conditions have been set. Each condition could use a different channel or multiple conditions could be set up on the same secondary channel.



6. Optionally, select the Not check box to stop fraction collection if the condition occurs. The text color of the tab number is yellow when Not is selected.
7. Optionally, select the Co-eluted Peaks check box to collect co-eluted peaks.
8. Optionally, select the Collect Non Peaks check box to collect non peaks.
9. Select the Fraction Sites tab.
    a. If using a liquid handler as a fraction collector, optionally set the collection and travel depths.

    The fraction collection depth is the probe height used when dispensing into fraction sites.

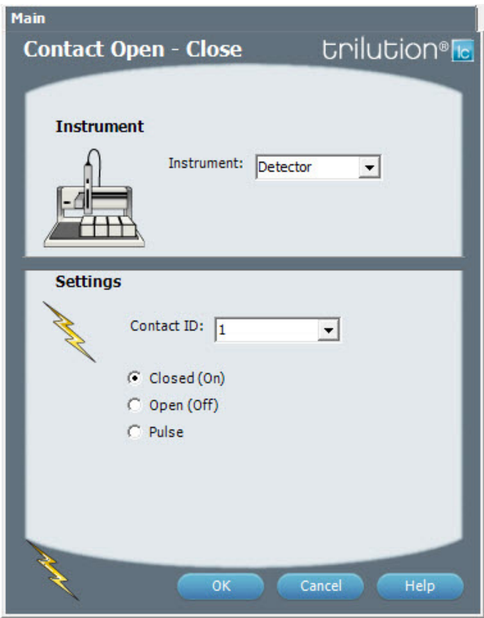
    The fraction travel depth is the probe height used when moving between fraction sites. The probe will move to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). The valid range is the Z travel distance or -1, where -1 is equal to the Z Safe Height.

    b. Select a fraction collector and zone where fraction collection will begin for an injected sample (Fraction Site 1). The default fraction well is 0, the indication for continuous collection where fractions are always collected in the next available tube.
    c. Select up to three additional fraction collectors and/or zones (Fraction Site 2, Fraction Site 3, and Fraction Site 4).

10. If subdividing, drag the Set Peak Per Tube or Set Non Peak Per Tube task and then drop it in the workspace after the Conditional Fraction Collection task. For non peak collection, select the Collect Non Peaks check box. Subdivision can be by time or volume.
11. Add the Start Fraction Collection (after the Set Peak Per Tube or Set Non Peak Per Tube task) and the Stop Fraction Collection tasks to the method.

Contact Open - Close

This task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.



For more information about the properties on each tab, refer to:

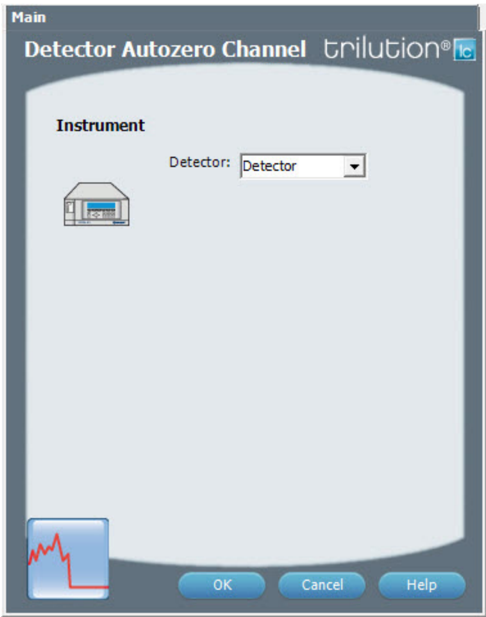
Contact Open - Close Properties on page 353

Contact Open - Close Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument	The instrument that the task will affect.	
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected.	1
Closed (On)	The action to occur: close and power on the Contact ID.	Selected
Open (Off)	The action to occur: open and power off the Contact ID.	Cleared
Pulse	Toggles the output state.	Cleared
Pulse Pulse Duration	Length of time the program will wait between each output contact state change.	0.02 min

Detector Autozero Channel

This task sets the sets the signal of each channel on the selected Detector to zero.



For more information about the properties on each tab, refer to:

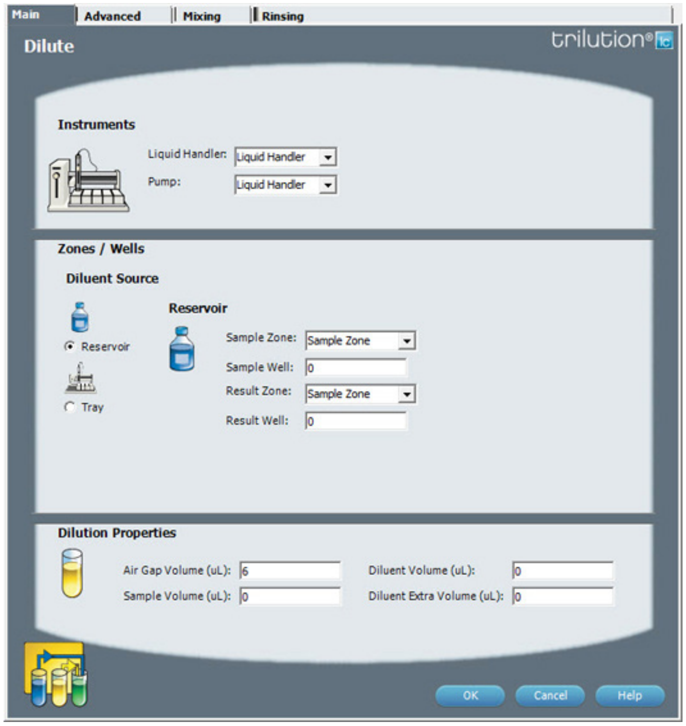
Detector Autozero Channel Properties on page 354

Detector Autozero Channel Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector

Dilute

This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. Next, the task aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.



For more information about the properties on each tab, refer to:

Dilute Properties - Main

Dilute Properties - Advanced

Dilute Properties - Mixing

Dilute Properties - Rinsing

Dilute - Sequence of Steps

Dilute - Sequence of Steps

The following is an overview for the sequence of steps.

1. Aspirate
2. Dispense
3. Mix with Liquid (Optional)
4. Mix with Air (Optional)
5. Inside Rinse
6. Outside Rinse

ASPIRATE

Move Z to Z Safe Height.

Reservoir

1. Aspirate Diluent Volume at Diluent Flow Rate.
2. Move to Result Well in Result Zone.
3. Lower probe to Result Z Option and Result Z Offset.
4. Dispense Diluent Volume at Result Flow Rate.

5. Move Z to Z Safe Height.
6. Aspirate Air Gap Volume at Air Gap Flow Rate.
7. Move to Sample Well in Sample Zone.
8. Lower probe to Sample Z Option and Sample Z Offset.
9. Aspirate Sample Volume at Sample Flow Rate.

Probe

1. Move to Diluent Well in Diluent Zone.
2. Aspirate Air Gap Volume at Air Gap Flow Rate.
3. Lower probe to Diluent Z Option and Diluent Z Offset.
4. Aspirate Diluent Volume + Diluent Extra Volume at Diluent Flow Rate.
5. Move Z to Z Safe Height.
6. Move to Sample Well in Sample Zone.
7. Aspirate Air Gap Volume at Air Gap Flow Rate.
8. Move to Sample Z Option and Sample Z Offset.
9. Aspirate Sample Volume at Sample Flow Rate.
10. Move Z to Z Safe Height.

DISPENSE

Reservoir

If Air Gap Volume = 0

1. Move Z to Z Safe Height.
2. Move to Result Well in Result Zone.
3. Lower probe to Result Z Option and Result Z Offset.
4. Dispense Sample Volume at Dispensing Flow Rate.
5. Move Z to Z Safe Height.

If Air Gap Volume > 0

1. Move Z to Z Safe Height.
2. Move to Result Well in Result Zone.
3. Lower probe to Result Z Option and Result Z Offset.
4. Dispense Sample Volume at Dispensing Flow Rate.
5. Move Z to Z Safe Height.
6. Move to Inside Rinse Well in Inside Rinse Zone.
7. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
8. Dispense 1/2 Air Gap Volume at Inside Rinse Flow Rate.
9. Move Z to Z Safe Height.

Probe

If Diluent Extra Volume = 0

1. Move Z to Z Safe Height.
2. Move to Result Well in Result Zone.
3. Lower probe to Result Z Option and Result Z Offset.
4. Dispense Sample Volume + Air Gap Volume + Diluent Volume +1/2 Air Gap Volume at Dispense Flow Rate.
5. Move Z to Z Safe Height.

If Diluent Extra Volume > 0

1. Move Z to Z Safe Height.
2. Move to Result Well in Result Zone.
3. Lower probe to Result Z Option and Result Z Offset.
4. Dispense Sample Volume + Air Gap Volume + Diluent Volume at Result Flow Rate.
5. Move Z to Z Safe Height.
6. Move to Inside Rinse Well in Inside Rinse Zone.
7. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
8. Dispense Diluent Extra Volume + Air Gap Volume at Inside Rinse Flow Rate.
9. Move Z to Z Safe Height.

MIX WITH LIQUID (OPTIONAL)

1. Move Z to Z Safe Height.
2. Aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset.
5. Aspirate Mixing Volume at Mix Aspirate Flow Rate.
6. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
7. Dispense Mixing Volume at Mix Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

MIX WITH AIR (OPTIONAL)

1. Move Z to Z Safe Height.
2. 2Move to Sample Well in Sample Zone.
3. Move Z to Z Safe Height.
4. Aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).
5. Aspirate Mixing Volume at Mix Aspirate Flow Rate.
6. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.

7. Dispense Mixing Volume at Mix Dispense Flow Rate.
8. Repeat steps 3–7 for Number of Cycles.
9. Move Z to Z Safe Height.

INSIDE RINSE

1. Move to Inside Rinse Well in Inside Rinse Zone.
2. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.

Dilute Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Flow Rate	The speed at which the Sample Volume moves into the probe.	1.5 mL/min
Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which the volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min

DILUTE PROPERTIES - ADVANCED CONTINUED ON PAGE 359

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Sample Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Sample Volume from the bed.	2 mm
Aspirate Sample LLF	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Diluent Z Option	One of five defined reference points used when aspirating the Diluent Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Diluent Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Diluent Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Diluent Z Offset	When selected, the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Diluent Z Option used when aspirating the Diluent Volume from the bed.	2 mm
Aspirate Diluent LLF	When selected, the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	Cleared

DILUTE PROPERTIES - ADVANCED CONTINUED ON PAGE 360

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Result Z Option	One of five defined reference points used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Result Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Result Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Result Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Result Z Option used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed.	2 mm
Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Result Zone. The Result Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Result Zone.	Cleared

Dilute Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Diluent Source	Select Reservoir or Tray.	Reservoir
Reservoir Sample Zone	The zone from which the Sample Volume is aspirated.	Sample Zone
Reservoir Sample Well	Enter the well number in the Sample Zone.	0
Reservoir Result Zone	The zone to which the Sample Volume and Diluent Volume are delivered.	Sample Zone
Reservoir Result Well	Enter the well number in the Result Zone.	0
Tray Sample Zone	The zone from which the Sample Volume is aspirated.	Sample Zone
Tray Sample Well	Enter the well number in the Sample Zone.	0
Tray Diluent Zone	The zone from which the Diluent Volume is aspirated.	Sample Zone
Tray Diluent Well	Enter the well number in the Diluent Zone.	0

DILUTE PROPERTIES - MAIN CONTINUED ON PAGE 361

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Tray Result Zone	The zone to which the Sample Volume and Diluent Volume are delivered.	Sample Zone
Tray Result Well	Enter the well number in the Result Zone.	0
Air Gap Volume	The quantity of an air gap.	6 µL
Sample Volume	The quantity of sample.	0 µL
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL
Diluent Extra Volume	When Tray is selected; an additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated and acts as an extra buffer between the air gap/reservoir solvent and the Diluent Volume.	0 µL

Dilute Properties - Mixing

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mixing Properties	Select Mix with Liquid or Mix with Air to perform a mix of the Diluent Volume with the Sample Volume. Select No Mix for no mixing.	No Mix
Mix with Liquid Number of Cycles	The number of times the task should repeat the commands related to mixing.	2
Mix with Liquid Mixing Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Liquid Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	10 mL/min
Mix with Liquid Mix Aspirate Z Option	One of five defined reference points used when aspirating the Mixing Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm

DILUTE PROPERTIES - MIXING CONTINUED ON PAGE 362

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Liquid Aspirate LLF	When selected the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	Cleared
Mix with Liquid Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Liquid Mix Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared
Mix with Air Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Air Mixing Volume	The quantity of air used as part of a mixing process.	0 µL
Mix with Air Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Air Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	10 mL/min

DILUTE PROPERTIES - MIXING CONTINUED ON PAGE 363

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Air Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Air Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Air Mix Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared

Dilute Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

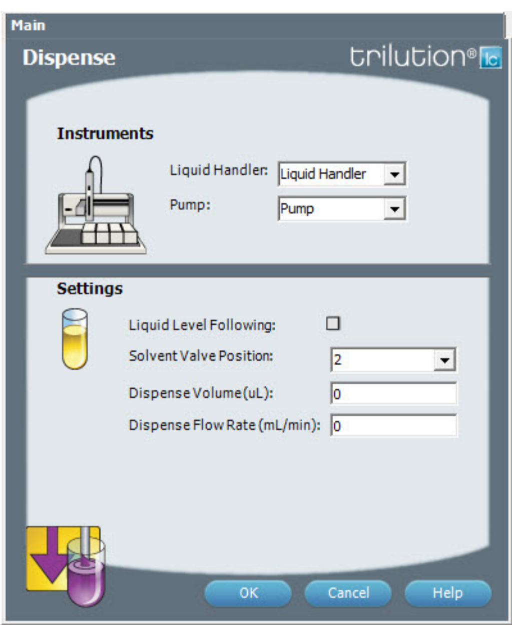
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

DILUTE PROPERTIES - RINSING CONTINUED ON PAGE 364

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Dispense

This task delivers liquid or air and must be synchronized with a Move to Sample Location task to move the probe to the well before dispensing.



For more information about the properties on each tab, refer to:

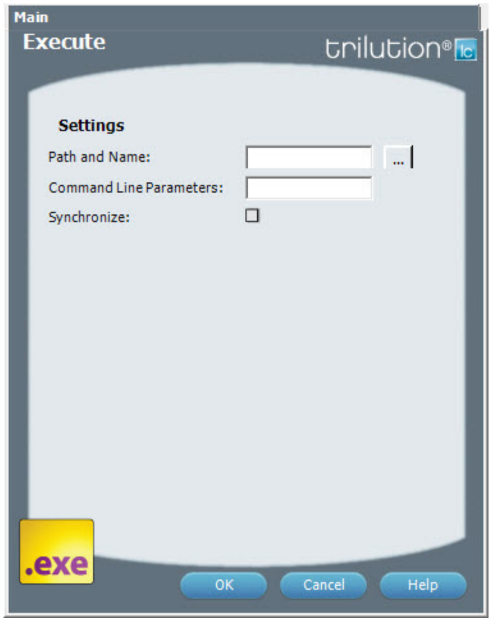
Dispense Properties on page 365

Dispense Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Liquid Level Following	When selected, the probe will follow the liquid up as it is dispensed. The Z Option for the Move to Sample Location task must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is dispensed to the Sample Zone in the Move to Sample Location task.	Cleared
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Dispense Volume	The quantity of liquid or air to be dispensed.	0 µL
Dispense Flow Rate	The speed at which the volume moves out of the probe.	0 mL/min

Execute

This task invokes an external application.



For more information about the properties on each tab, refer to:

Execute Properties

Execute Properties

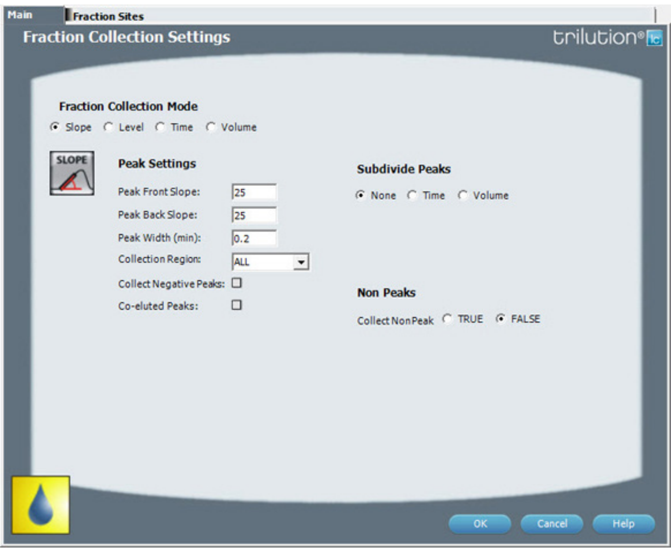
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Path and Name	File path to which the Command Line Parameters are sent. Click ... to browse for the executable program.	
Command Line Parameters	The information sent to the program located at the Path and Name.	

EXECUTE PROPERTIES CONTINUED ON PAGE 366

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Synchronize	Synchronize selected waits for the external program to close before continuing task execution. Synchronize cleared launches the external program and then immediately resumes task execution.	Cleared

Fraction Collection Settings

This task sets all parameters for fraction collection. For more information about fraction collection, refer to Fraction Collection Techniques.



For more information about the properties on each tab, refer to:

Fraction Collection Settings Properties - Main

Fraction Collection Settings Properties - Fraction Sites

Fraction Collection Settings Properties - Fraction Sites

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Collection and Travel Depths	Select Do not set Collection and Travel Depths or Set Collection and Travel Depths.	Do not set Collection and Travel Depths
Set Collection and Travel Depths Fraction Collection Depth	The probe height used when dispensing into fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance or -1, where -1 is equal to the Z Safe Height. Only used when a liquid handler is functioning as a fraction collector.	-1 mm
Set Collection and Travel Depths Fraction Travel Depth	The probe height used when moving between fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance or -1, where -1 is equal to the Z Safe Height. Only used when a liquid handler is functioning as a fraction collector.	-1 mm
Fraction Site 1 Fraction Collector 1	The first fraction collector that the task will affect.	

FRACTION COLLECTION SETTINGS PROPERTIES - FRACTION SITES CONTINUED ON PAGE 367

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Site 1 Fraction Zone 1	The zone in which fractions are collected on the first fraction collector.	Fraction Zone
Fraction Site 1 Fraction Well 1	Enter the well number in the Fraction Zone in which collection will begin on the first fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0
Fraction Site 2 Fraction Collector 2	The second fraction collector that the task will affect.	
Fraction Site 2 Fraction Zone 2	The zone in which fractions are collected on the second fraction collector.	Fraction Zone
Fraction Site 2 Fraction Well 2	Enter the well number in the Fraction Zone in which collection will begin on the second fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0
Fraction Site 3 Fraction Collector 3	The third fraction collector that the task will affect.	
Fraction Site 3 Fraction Zone 3	The zone in which fractions are collected on the third fraction collector.	Fraction Zone
Fraction Site 3 Fraction Well 3	Enter the well number in the Fraction Zone in which collection will begin on the third fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0
Fraction Site 4 Fraction Collector 4	The fourth fraction collector that the task will affect.	
Fraction Site 4 Fraction Zone 4	The zone in which fractions are collected on the fourth fraction collector.	Fraction Zone
Fraction Site 4 Fraction Well 4	Enter the well number in the Fraction Zone in which collection will begin on the fourth fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0

Fraction Collection Settings Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Collection Mode	Slope, Level, Time, or Volume	Slope
Slope Peak Front Slope	Consider the angle of the peak's ascending edge when setting the value for Peak Front Slope. A smaller Peak Front Slope value will collect smaller, sharper peaks. To reduce the number of small peaks collected, increase the Peak Front Slope value.	25
Slope Peak Back Slope	Consider the angle of the peak's descending edge when setting the value for Peak Back Slope. If the peak has significant tailing, the Peak Back Slope value should be increased to reduce the amount of the tail that is collected or decreased to increase the amount of the tail that is collected.	25

FRACTION COLLECTION SETTINGS PROPERTIES - MAIN CONTINUED ON PAGE 368

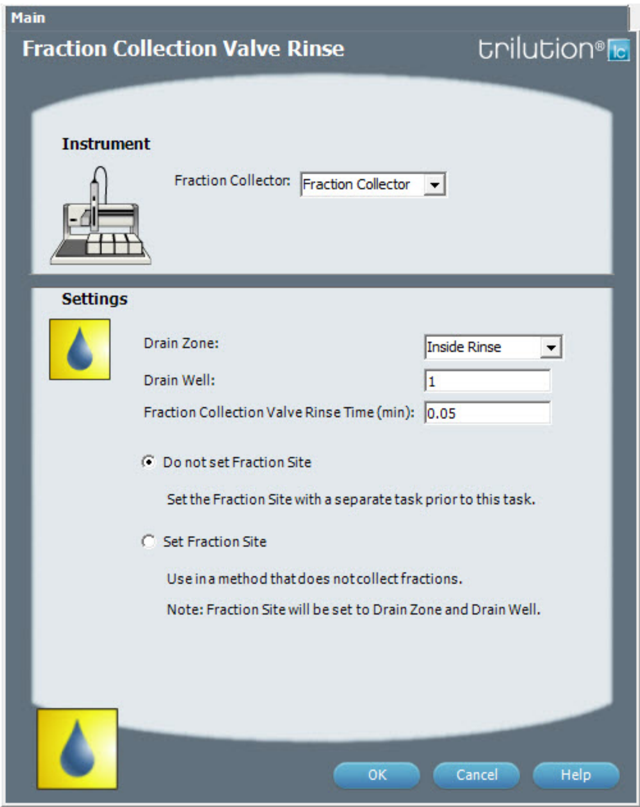
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Slope Peak Width	The size of the data window that is used to calculate whether the slope condition has been met. If the trace has a lot of noise, set a higher value to reduce the number of smaller peaks that are collected or set a lower value to increase the number of smaller peaks that are collected.	0.2 min
Slope Subdivided Peaks	Select None, Time, or Volume If collecting primarily by Slope or Level, this option allows you to subdivide the peak collection by Time or Volume.	None
Slope - Subdivide Peaks Time Per Tube	Enter the time to dispense at each tube.	0 min
Slope -Subdivide Peaks Volume Per Tube	Enter the maximum volume to be collected into each tube.	0 µL
Slope Non Peaks	Indicates if all non peaks should be collected into tubes (TRUE) or not (FALSE). When TRUE, select from None, Time, or Volume.	FALSE
Slope - Non Peaks Time Per Tube	Enter the time to dispense at each tube when collecting non peaks.	0 min
Slope - Non Peaks Volume Per Tube	Enter the maximum volume of non peak effluent to be collected into each tube.	0 µL
Slope Collection Region	Indicate whether the front of the slope to the apex (Front APEX), the apex to the tail (APEX Tail) or the entire peak (ALL) should be collected. To collect the entire peak, but advance to the next well at the apex, select APEX. Refer to Fraction Collection Techniques for examples of how the Collection Region option is used.	ALL
Slope Collect Negative Peaks	Select to turn on or clear to turn off the collection of negative and positive peaks	Cleared
Slope Co-eluted Peaks	Select to turn on or clear to turn off the collection of co-eluted peaks.	Cleared
Level Peak Level	When the Fraction Collection Mode selected is Level; the level above which all peaks are collected. This value is especially useful if the detector signal should go off-scale during collection.	0
Level Collect Negative Peak	Select to turn on or clear to turn off the collection of negative peaks	Cleared
Level Subdivided Peaks	Select from None, Time, or Volume. If collecting primarily by Slope or Level, this option allows you to subdivide the peak collection by Time or Volume.	None
Level - Subdivide Peaks Time Per Tube	Enter the time to dispense at each tube.	0 min
Level -Subdivide Peaks Volume Per Tube	Enter the maximum volume to be collected into each tube.	0 µL
Level Collect Non Peak	Indicates if all non peaks should be collected into tubes (TRUE) or not (FALSE).	FALSE

FRACTION COLLECTION SETTINGS PROPERTIES - MAIN CONTINUED ON PAGE 369

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Level - Non Peaks Time Per Tube	Enter the time to dispense at each tube when collecting non peaks.	0 min
Level - Non Peaks Volume Per Tube	Enter the maximum volume of non peak effluent to be collected into each tube.	0 µL
Time Time per Tube	Enter the time to dispense at each tube.	0 min
Volume Volume per Tube	Enter the maximum volume to be collected into each tube.	0 µL

Fraction Collection Valve Rinse

This task rinses the fraction collection valve for a user-specified duration.



For more information about the properties on each tab, refer to:

Fraction Collection Valve Rinse Properties on page 370

Fraction Collection Valve Rinse - Sequence of Steps

Fraction Collection Valve Rinse - Sequence of Steps

1. Move to Drain Well in Drain Zone.

NOTE	**This task will not move the Z to the Z Safe Height before moving to the Drain Zone. If using this task on a liquid handler/fraction collector, ensure that the Z is at a safe height before executing this task.**

2. Switch fraction collection valve to COLLECT for Fraction Collection Valve Rinse Time then switch the fraction collection valve to DIVERT.

Fraction Collection Valve Rinse Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Collector	The fraction collector that the task will affect.	Fraction Collector
Drain Zone	The zone in which the fraction collection valve is rinsed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Fraction Collection Valve Rinse Time	After the valve switches to COLLECT, the length of time the valve is rinsed before switching the valve back to DIVERT.	0.05 min
Do not set Fraction Site	Select this option to set the Fraction Site with a separate task prior to this task.	Selected
Set Fraction Site	Select this option when this task is being used in a method that does not collect fractions. The Fraction Site will be set to Drain Zone and Drain Well.	Cleared

GSIOC

This task sends a GSIOC command to the specified instrument or unit ID.

For more information about the properties on each tab, refer to:

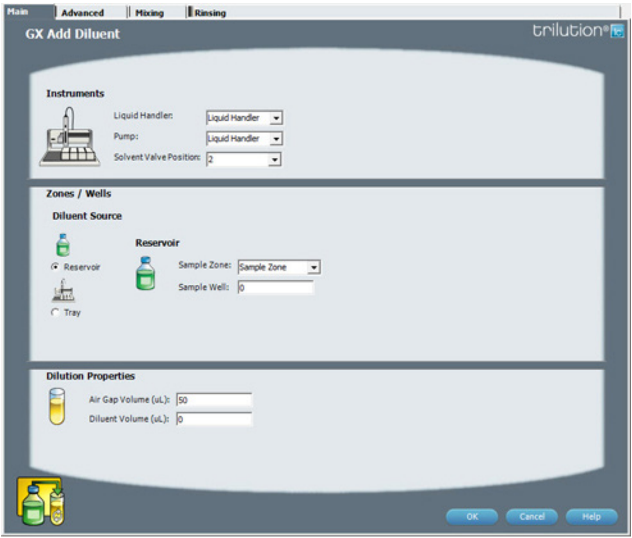
GSIOC Properties on page 370

GSIOC Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
GSIOC Mode	The GSIOC Modes: GSIOC with ID or GSIOC. GSIOC mode sends a GSIOC command to the specified instrument. GSIOC with ID mode sends a GSIOC command to an instrument at a specified unit ID.	GSIOC
GSIOC with ID Unit ID	The unit ID of the instrument that the task will affect.	1
GSIOC Instrument	The instrument that the task will affect.	
Type	The command type: BUFFERED or IMMEDIATE.	BUFFERED
GSIOC Command	The string that sends an instruction to the Instrument.	

GX Add Diluent

This task aspirates the specified liquid (Diluent Source) from the reservoir or the probe and then dispenses to the wells of the sample zone and then mixes with liquid or air.



For more information about the properties on each tab, refer to:

GX Add Diluent Properties - Main on page 374
GX Add Diluent Properties - Advanced
GX Add Diluent Properties - Mixing
GX Add Diluent Properties - Rinsing
GX Add Diluent - Sequence of Steps

GX Add Diluent - Sequence of Steps

1. Aspirate
2. Dispense
3. Mix with Liquid (Optional)
4. Mix with Air (Optional)
5. Inside Rinse
6. Outside Rinse

ASPIRATE

Move Z to Z Safe Height.

Probe

1. Move to Diluent Well in Diluent Zone.
2. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Lower probe to Aspirate Z Option and Aspirate Z Offset.
4. Aspirate Diluent Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

DISPENSE

Reservoir

1. Move to Sample Well in Sample Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.

3. Switch solvent valve to Solvent Valve Position and dispense Diluent Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.

Probe

Air Gap Volume = 0

1. Move to Sample Well in Sample Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Diluent Volume at Dispense Flow Rate
4. Move Z to Z Safe Height.

Air Gap Volume > 0

1. Move to Sample Well in Sample Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Diluent Volume + 1/2 Air Gap Volume at Dispense Flow Rate
4. Move Z to Z Safe Height.
5. Move to Inside Rinse Well in Inside Rinse Zone.
6. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
7. Dispense 1/2 Air Gap Volume at Inside Rinse Flow Rate.
8. Move Z to Z Safe Height.

MIX WITH LIQUID (OPTIONAL)

If Mix with Liquid = TRUE

1. Move Z to Z Safe Height.
2. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset.
5. Aspirate Mixing Volume at Mix Aspirate Flow Rate.
6. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
7. Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Mix Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

MIX WITH AIR (OPTIONAL)

If Mix with Air = TRUE

1. Move Z to Z Safe Height.
2. Move to Sample Well in Sample Zone.

3. Move Z to Z Safe Height.
4. Switch solvent valve to waste and aspirate Air Gap Volume (first cycle only) and Mixing Volume at Mix Aspirate Flow Rate.
5. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
6. Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Mix Dispense Flow Rate.
7. Repeat steps 3–6 for Number of Cycles.
8. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX Add Diluent Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX ADD DILUENT PROPERTIES - ADVANCED CONTINUED ON PAGE 374

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Z Option	One of five defined reference points used when aspirating the Diluent Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Aspirate Z Offset	When Tray is selected, the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option used when aspirating the Diluent Volume from the bed.	2 mm
Aspirate LLF	When Tray is selected, the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	Cleared
Dispense Z Option	One of five defined reference points used when delivering the Diluent Volume to the bed: Auto Calculate: laces probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option used when delivering the Diluent Volume to the bed.	2 mm
Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone.	Cleared

GX Add Diluent Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler

GX ADD DILUENT PROPERTIES - MAIN CONTINUED ON PAGE 375

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. Note: The position designated for waste cannot be used for a solvent.	2
Diluent Source	Select Reservoir or Tray.	Reservoir
Reservoir Sample Zone	The zone to which the Diluent Volume is delivered.	Sample Zone
Reservoir Sample Well	Enter the well number in the Sample Zone.	0
Tray Diluent Zone	When Tray is selected; the zone from which the Diluent Volume is aspirated.	Sample Zone
Tray Diluent Well	When Tray is selected; enter the well number in the Diluent Zone.	0
Tray Sample Zone	The zone to which the Diluent Volume is delivered.	Sample Zone
Tray Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL

GX Add Diluent Properties - Mixing

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mixing Properties	Select Mix with Liquid or Mix with Air to perform a mix of the Diluent Volume with the Sample Volume. Select No Mix for no mixing.	No Mix
Mix with Liquid Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Liquid Mixing Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Liquid Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	5 mL/min

GX ADD DILUENT PROPERTIES - MIXING CONTINUED ON PAGE 376

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Liquid Mix Aspirate Z Option	One of five defined reference points used when aspirating the Mixing Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm
Mix with Liquid Aspirate LLF	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process.	Cleared
Mix with Liquid Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Liquid Mix Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared
Mix with Air Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Air Mixing Volume	The quantity of air used as part of a mixing process.	0 µL

GX ADD DILUENT PROPERTIES - MIXING CONTINUED ON PAGE 377

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Air Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Air Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	5 mL/min
Mix with Air Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Air Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Air Mix Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared

GX Add Diluent Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min

GX ADD DILUENT PROPERTIES - RINSING CONTINUED ON PAGE 378

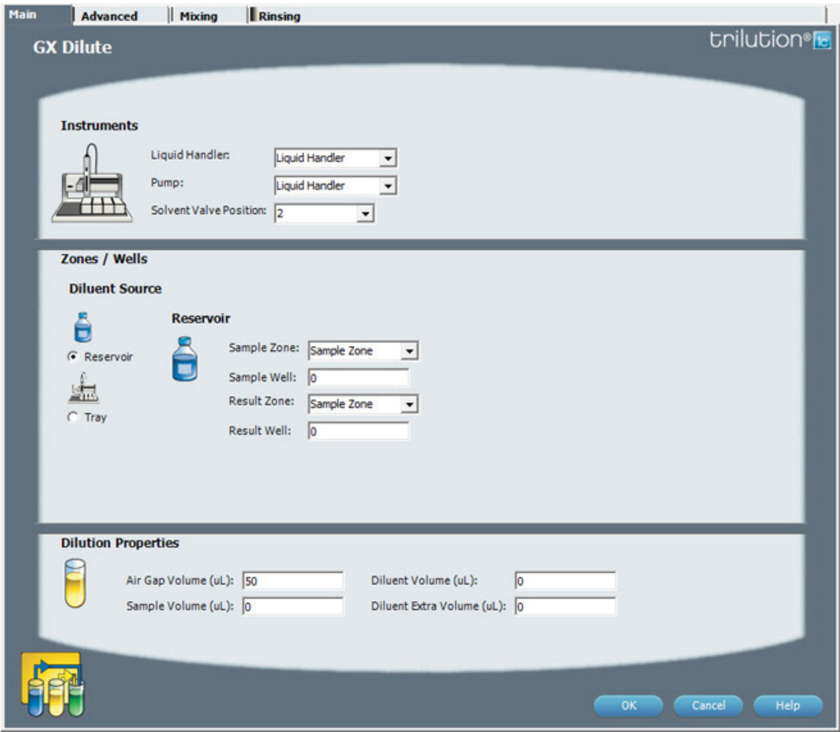
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX ADD DILUENT PROPERTIES - RINSING CONTINUED ON PAGE 379

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Dilute

This task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone. Finally, a mix with liquid or air is performed in the wells of the result zone.



For more information about the properties on each tab, refer to:

GX Dilute Properties - Main on page 385
GX Dilute Properties - Advanced
GX Dilute Properties - Mixing
GX Dilute Properties - Rinsing
GX Dilute - Sequence of Steps

GX Dilute - Sequence of Steps

The following is an overview for the sequence of steps.

1. Aspirate
2. Dispense
3. Mix with Liquid (Optional)
4. Mix with Air (Optional)
5. Inside Rinse
6. Outside Rinse

ASPIRATE

Move Z to Z Safe Height.

Reservoir

1. Move to Result Well in Result Zone.
2. Lower probe to Result Z Option and Result Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Diluent Volume at Result Flow Rate.

4. Move Z to Z Safe Height.
5. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
6. Move to Sample Well in Sample Zone.
7. Lower probe to Sample Z Option and Sample Z Offset.
8. Aspirate Sample Volume at Sample Flow Rate.
9. Move Z to Z Safe Height.

Probe

1. Move to Diluent Well in Diluent Zone.
2. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Lower probe to Diluent Z Option and Diluent Z Offset.
4. Aspirate Diluent Volume + Diluent Extra Volume at Diluent Flow Rate.
5. Move Z to Z Safe Height.
6. Move to Sample Well in Sample Zone.
7. Aspirate Air Gap Volume at Air Gap Flow Rate.
8. Lower probe to Sample Z Option and Sample Z Offset.
9. Aspirate Sample Volume at Sample Flow Rate.
10. Move Z to Z Safe Height.

DISPENSE

Reservoir

If Air Gap Volume = 0

1. Move to Result Well in Result Zone.
2. Lower probe to Result Z Option and Result Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Sample Volume at Result Flow Rate.
4. Move Z to Z Safe Height.

If Air Gap Volume > 0

1. Move to Result Well in Result Zone.
2. Lower probe to Result Z Option and Result Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Sample Volume and 1/2 Air Gap Volume at Result Flow Rate.
4. Move Z to Z Safe Height.
5. Move to Inside Rinse Well in Inside Rinse Zone.
6. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
7. Dispense 1/2 Air Gap Volume at Inside Rinse Flow Rate.
8. Move Z to Z Safe Height.

LIST OF TASKS

Probe

If Diluent Extra Volume = 0

1. Move to Result Well in Result Zone.
2. Lower probe to Result Z Option and Result Z Offset.
3. Dispense Sample Volume + Air Gap Volume + Diluent Volume +1/2 Air Gap Volume at Result Flow Rate.
4. Move Z to Z Safe Height.
5. Move to Inside Rinse Well in Inside Rinse Zone.
6. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
7. Dispense Diluent Extra Volume + Air Gap Volume at Inside Rinse Flow Rate.
8. Move Z to Z Safe Height.

If Diluent Extra Volume > 0

1. Move to Result Well in Result Zone.
2. Lower probe to Result Z Option and Result Z Offset.
3. Dispense Sample Volume + Air Gap Volume + Diluent Volume at Result Flow Rate.
4. Move Z to Z Safe Height.
5. Move to Inside Rinse Well in Inside Rinse Zone.
6. Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
7. Dispense Diluent Extra Volume + Air Gap Volume at Inside Rinse Flow Rate.
8. Move Z to Z Safe Height.

MIX WITH LIQUID (OPTIONAL)

If Mix with Liquid = TRUE

1. Move Z to Z Safe Height.
2. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Result Well in Result Zone.
4. Lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset.
5. Aspirate Mixing Volume at Mix Aspirate Flow Rate.
6. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
7. Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Mix Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

MIX WITH AIR (OPTIONAL)

If Mix with Air = TRUE

1. Move Z to Z Safe Height.
2. Move to Result Well in Result Zone.

3. Move Z to Z Safe Height.
4. Switch solvent valve to waste and aspirate Air Gap Volume (first cycle only) and Mixing Volume at Mix Aspirate Flow Rate.
5. Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
6. Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Mix Dispense Flow Rate.
7. Repeat steps 3–6 for Number of Cycles.
8. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX Dilute Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Flow Rate	The speed at which the Sample Volume moves into the probe.	1.5 mL/min
Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe.	1.5 mL/min
Result Flow Rate	The speed at which the Sample Volume, Diluent Volume, and Air Gap Volume move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX DILUTE PROPERTIES - ADVANCED CONTINUED ON PAGE 384

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of the five defined reference points used when aspirating the Sample Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Sample Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Sample Volume from the bed.	2 mm
Aspirate Sample LLF	When selected the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Diluent Z Option	One of five defined reference points used when aspirating the Diluent Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Diluent Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Diluent Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Diluent Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Diluent Z Offset	When Tray is selected, the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Diluent Z Option used when aspirating the Diluent Volume from the bed.	2 mm
Aspirate Diluent LLF	When the Tray is selected, the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	Cleared

GX DILUTE PROPERTIES - ADVANCED CONTINUED ON PAGE 385

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Result Z Option	One of five defined reference points used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Result Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Result Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Result Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Result Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Result Z Option used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed.	2 mm
Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Result Zone. The Result Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Result Zone.	Cleared

GX Dilute Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Diluent Source	Select Reservoir or Tray.	Reservoir
Reservoir Sample Zone	The zone from which the Sample Volume is aspirated.	Sample Zone
Reservoir Sample Well	Enter the well number in the Sample Zone.	0
Reservoir Result Zone	The zone to which the Sample Volume and Diluent Volume are delivered.	Sample Zone
Reservoir Result Well	Enter the well number in the Result Zone.	0
Tray Sample Zone	The zone from which the Sample Volume is aspirated.	Sample Zone
Tray Sample Well	Enter the well number in the Sample Zone.	0
Tray Diluent Zone	The zone from which the Diluent Volume is aspirated.	Sample Zone

GX DILUTE PROPERTIES - MAIN CONTINUED ON PAGE 386

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Tray Diluent Well	Enter the well number in the Diluent Zone.	0
Tray Result Zone	The zone to which the Sample Volume and Diluent Volume are delivered.	Sample Zone
Tray Result Well	Enter the well number in the Result Zone.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Sample Volume	The quantity of sample.	0 µL
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL
Diluent Extra Volume	When Tray is selected, an additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated and acts as an extra buffer between the air gap/reservoir solvent and the Diluent Volume.	0 µL

GX Dilute Properties - Mixing

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mixing Properties	Select Mix with Liquid or Mix with Air to perform a mix of the Diluent Volume with the Sample Volume. Select No Mix for no mixing.	No Mix
Mix with Liquid Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Liquid Mixing Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Liquid Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	5 mL/min
Mix with Liquid Mix Aspirate Z Option	One of five defined reference points used when aspirating the Mixing Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm

GX DILUTE PROPERTIES - MIXING CONTINUED ON PAGE 387

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Liquid Aspirate LLF	When selected, the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	Cleared
Mix with Liquid Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Liquid Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Liquid Mix Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared
Mix with Air Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mix with Air Mixing Volume	The quantity of air used as part of a mixing process.	0 µL
Mix with Air Mix Aspirate Flow Rate	The speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix with Air Mix Dispense Flow Rate	The speed at which volumes move out of the probe during the mixing process.	5 mL/min

GX DILUTE PROPERTIES - MIXING CONTINUED ON PAGE 388

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mix with Air Mix Dispense Z Option	One of five defined reference points used when delivering the Mixing Volume to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Mix with Air Mix Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix with Air Mix Dispense LLF	When selected, the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	Cleared

GX Dilute Properties - Rinsing

For information on Rinse Positions, refer to Rinse Locations.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top

GX DILUTE PROPERTIES - RINSING CONTINUED ON PAGE 389

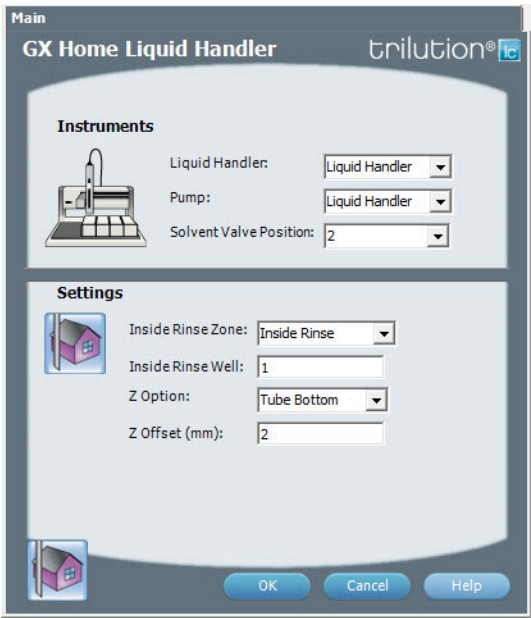
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX DILUTE PROPERTIES - RINSING CONTINUED ON PAGE 390

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Home Liquid Handler

This task homes a GX-Series liquid handler and GX Solvent System.



For more information about the properties on each tab, refer to:

GX Home Liquid Handler Properties on page 390

GX Home Liquid Handler - Sequence of Steps

GX Home Liquid Handler - Sequence of Steps

1 Home the X/Y/Z of the Liquid Handler.

2 Home GX Solvent System.

3 Move the probe to Inside Rinse Zone.

4 Lower probe to Z Option and Z Offset.

5 Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.

6 Move Z to Z Safe Height.

GX Home Liquid Handler Properties

For information on Rinse Positions, refer to Rinse Locations.

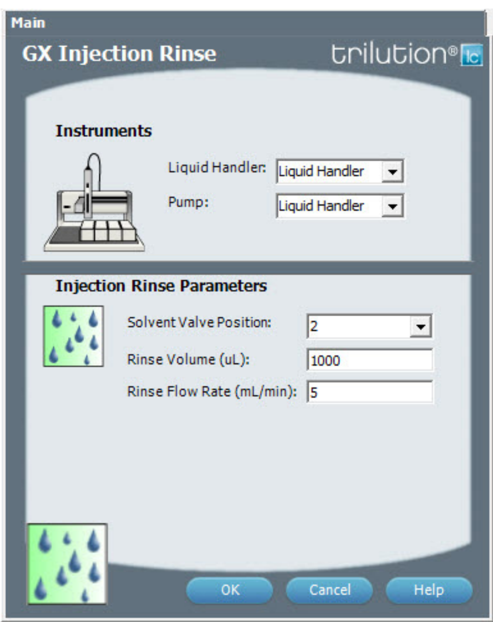
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler

GX HOME LIQUID HANDLER PROPERTIES CONTINUED ON PAGE 391

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Inside Rinse Zone	The zone at which the Pump is homed.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Z Option	One of five defined reference points used when performing the move: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	2 mm

GX Injection Rinse

This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe into the injection port prior to rinsing.



For more information about the properties on each tab, refer to:

GX Injection Rinse Properties on page 392

GX Injection Rinse - Sequence of Steps

GX Injection Rinse - Sequence of Steps

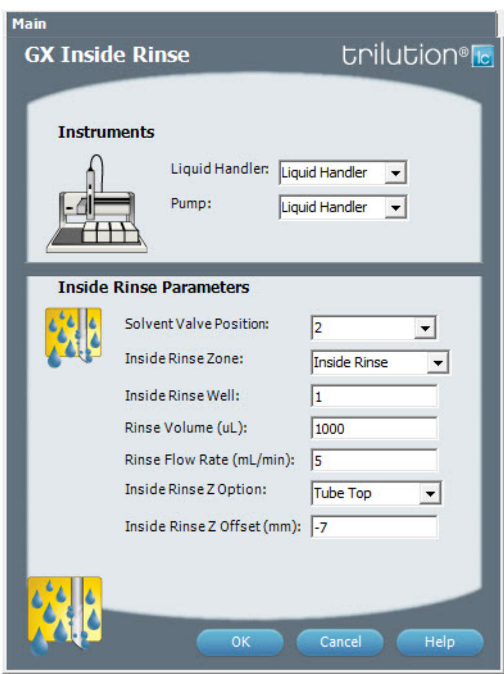
1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Rinse Volume at Rinse Flow Rate.
3. Move Z to Z Safe Height.

GX Injection Rinse Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Volume	The quantity of liquid dispensed.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the injection port.	5 mL/min

GX Inside Rinse

This task moves to the rinse station and then rinses the inside of the probe.



For more information about the properties on each tab, refer to:

GX Inside Rinse Properties on page 393

GX Inside Rinse - Sequence of Steps

GX Inside Rinse - Sequence of Steps

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Rinse Flow Rate.
5. Dispense Rinse Volume at Rinse Flow Rate.
6. Move Z to Z Safe Height.

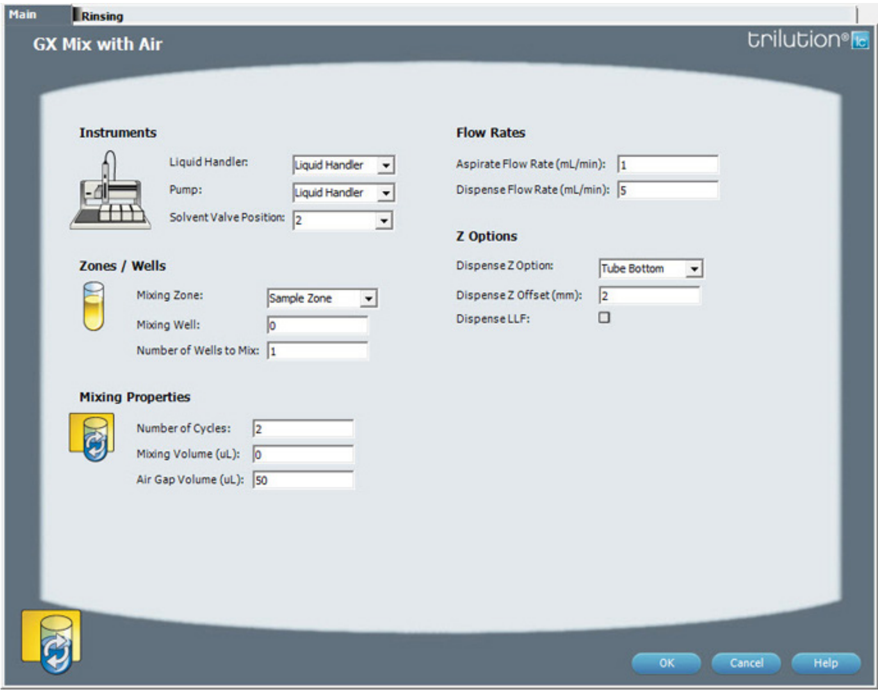
GX Inside Rinse Properties

For information on Rinse Positions, refer to Rinse Locations.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Inside Rinse Zone	The zone to which the Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm

GX Mix with Air

This task aspirates air and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, refer to:

GX Mix with Air Properties - Main

GX Mix with Air Properties - Rinsing

GX Mix with Air - Sequence of Steps

GX Mix with Air - Sequence of Steps

The following is an overview for the sequence of steps.

1. Mix
2. Inside Rinse
3. Outside Rinse

MIX

1. Move Z to Z Safe Height.
2. Move to Mixing Well in Mixing Zone.
3. Move Z to Z Safe Height.
4. Switch solvent valve to waste and aspirate Air Gap Volume (first cycle only) and Mixing Volume at Aspirate Flow Rate.
5. Lower probe to Dispense Z Option and Dispense Z Offset.
6. Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Dispense Flow Rate.
7. Repeat steps 3–6 for Number of Cycles.
8. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.

3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 3–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.
9. Repeat Number of wells to mix.

GX Mix with Air Properties - Main

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Mixing Zone	The zone in which the Mixing Volume is mixed.	Sample Zone
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of air used as part of a mixing process.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Aspirate Flow Rate	The speed at which a volume of air moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which a volume of air moves out of the probe.	5 mL/min

GX MIX WITH AIR PROPERTIES - MAIN CONTINUED ON PAGE 396

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Dispense Z Option	One of five defined reference points used when delivering air to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering air to the bed.	2 mm
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Mixing Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Mixing Zone.	Cleared

GX Mix with Air Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

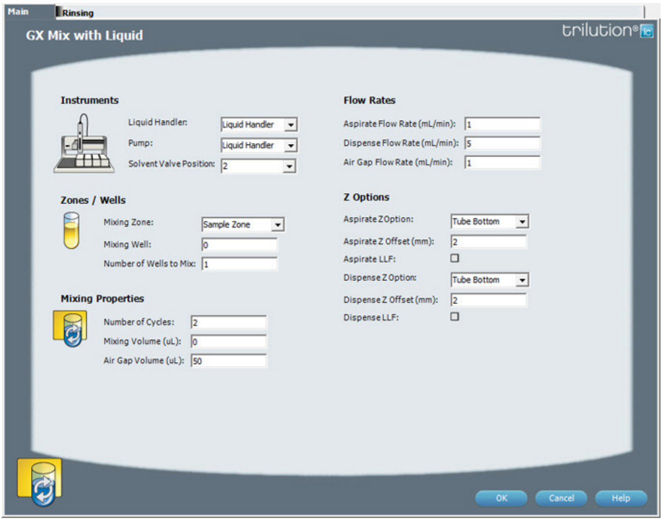
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm

GX MIX WITH AIR PROPERTIES - RINSING CONTINUED ON PAGE 397

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Mix with Liquid

This task aspirates liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, refer to:

GX Mix with Liquid Properties - Main on page 399

GX Mix with Liquid Properties - Rinsing

GX Mix with Liquid - Sequence of Steps

GX Mix with Liquid - Sequence of Steps

The following is an overview for the sequence of steps.

1. Mix
2. Inside Rinse
3. Outside Rinse

MIX

1. Move Z to Z Safe Height.
2. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Mixing Well in Mixing Zone.
4. Lower probe to Aspirate Z Option and Aspirate Z Offset.
5. Switch solvent valve to waste and aspirate Mixing Volume at Aspirate Flow Rate.
6. Lower probe to Dispense Z Option and Dispense Z Offset.
7. Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.

5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX Mix with Liquid Properties - Main

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Mixing Zone	The zone in which the Mixing Volume is mixed.	Sample Zone
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of liquid used as part of a mixing process.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Aspirate Flow Rate	The speed at which the Mixing Volume moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which the Mixing Volume moves out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX MIX WITH LIQUID PROPERTIES - MAIN CONTINUED ON PAGE 400

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Aspirate Z Option	One of five defined reference points used when drawing liquids from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Aspirate Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquids from the bed.	2 mm
Aspirate LLF	When selected the probe will follow the liquid down as it is aspirated from the Mixing Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Mixing Zone.	Cleared
Dispense Z Option	One of five defined reference points used when delivering liquids to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquids to the bed.	2
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Mixing Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Mixing Zone.	Cleared

GX Mix with Liquid Properties - Rinsing

For information on Rinse Positions, refer to Rinse Locations.

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1

GX MIX WITH LIQUID PROPERTIES - RINSING CONTINUED ON PAGE 401

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX MIX WITH LIQUID PROPERTIES - RINSING CONTINUED ON PAGE 402

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Outside Rinse

This task moves to the rinse station and then rinses the outside of the probe.

For more information about the properties on each tab, refer to:

GX Outside Rinse Properties on page 403

GX Outside Rinse - Sequence of Steps

GX Outside Rinse - Sequence of Steps

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch valve to Purge Solvent Valve Position and dispense volume held by transfer tubing at Outside Rinse Flow Rate.
5. Switch Rinse Pump on at Rinse Pump Speed.

6. Move to rinse station/well 1 in Outside Rinse Zone.
7. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
8. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
9. Switch Rinse Pump off.
10. Move Z to Z Safe Height.
11. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX Outside Rinse Properties

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

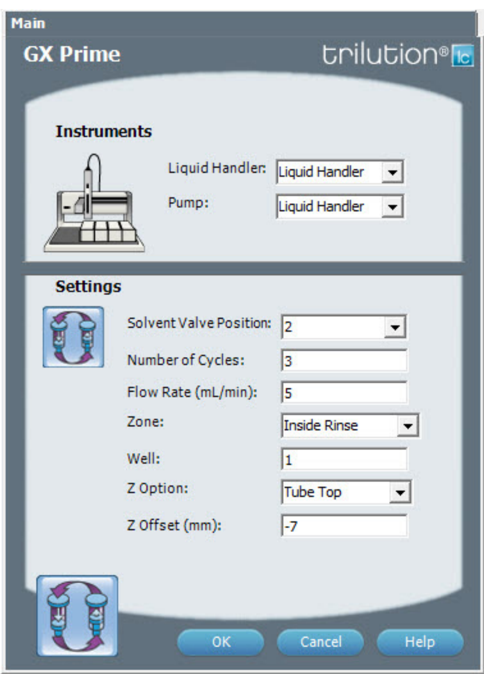
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Purge Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL

GX OUTSIDE RINSE PROPERTIES CONTINUED ON PAGE 404

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Prime

This task primes the transfer tubing. It dispenses the transfer tubing capacity from the reservoir to the specified wells in the specified zone for the number of cycles.



For more information about the properties on each tab, refer to:

GX Prime Properties on page 405

GX Prime - Sequence of Steps

GX Prime - Sequence of Steps

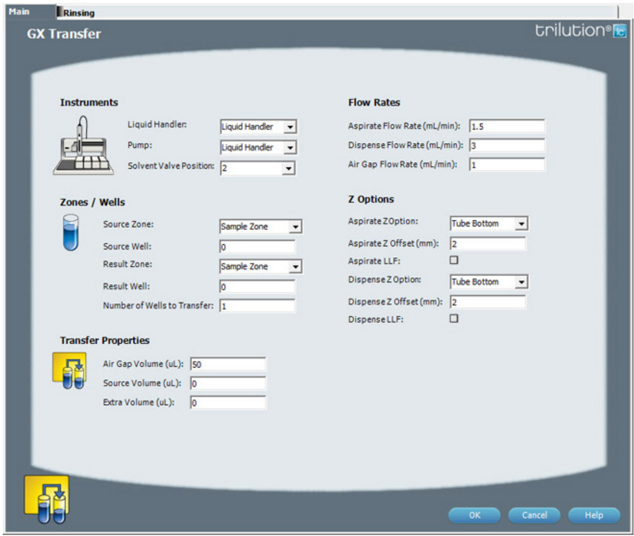
1. Move Z to Z Safe Height.
2. Move to Well in Zone.
3. Lower probe to Z Option and Z Offset.
4. Home GX Solvent System.
5. Switch solvent valve to Solvent Valve Position and dispense transfer tubing capacity x Number of Cycles at Flow Rate.
6. Move Z to Z Safe Height.

GX Prime Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6.	2
Number of Cycles	Enter the number of times to repeat dispensing.	3
Flow Rate	The speed at which the liquid moves out of the probe.	5 mL/min
Zone	The zone to which the volume is dispensed.	Inside Rinse
Well	Enter the well number in the Zone.	1
Z Option	One of five defined reference points used when delivering liquid: Auto Calculate: Places probe into well and at the liquid level in X,Y coordinate using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option for delivering liquids to the rinse station.	2 mm

GX Transfer

This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, refer to:

GX Transfer Properties - Main

GX Transfer Properties - Rinsing

GX Transfer - Sequence of Steps

GX Transfer - Sequence of Steps

The following is an overview for the sequence of steps.

1. Aspirate
2. Dispense
3. Inside Rinse
4. Outside Rinse

ASPIRATE

1. Move Z to Z Safe Height.
2. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Source Well in Source Zone.
4. Lower probe to Aspirate Z Option and Aspirate Z Offset.
5. Aspirate Source Volume + Extra Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

DISPENSE

If Extra Volume = 0

1. Move to Result Well in Result Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Source Volume + 1/2 Air Gap Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.

If Extra Volume > 0

1. Move to Result Well in Result Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Source Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX Transfer Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Source Zone	The zone from which the Source Volume and Source Extra Volume are drawn.	Sample Zone
Source Well	Enter the well number in the Source Zone.	0
Result Zone	The zone to which the Source Volume is delivered.	Sample Zone

GX TRANSFER PROPERTIES - MAIN CONTINUED ON PAGE 408

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Result Well	Enter the well number in the Result Zone.	0
Number of Wells to Transfer	The number of Source Wells to transfer to Result Wells.	1
Air Gap Volume	The quantity of the air gap aspirated before the Source Volume.	50 µL
Source Volume	The quantity of sample	0
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0
Aspirate Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which the Source Volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Aspirate Z Option	One of five defined reference points used when drawing liquids from the bed: Auto Calculate: Places probe into well and at the liquid level in X,Y coordinate using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Aspirate Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquids from the bed.	2 mm
Aspirate LLF	When selected the probe will follow the liquid down as it is aspirated from the Source Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Source Zone.	Cleared
Dispense Z Option	One of five defined reference points used when delivering liquids to the bed: Auto Calculate: Places probe into well and at the liquid level in X,Y coordinate using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

GX TRANSFER PROPERTIES - MAIN CONTINUED ON PAGE 409

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquids to the bed.	2 mm
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Result Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Result Zone.	Cleared

GX Transfer Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

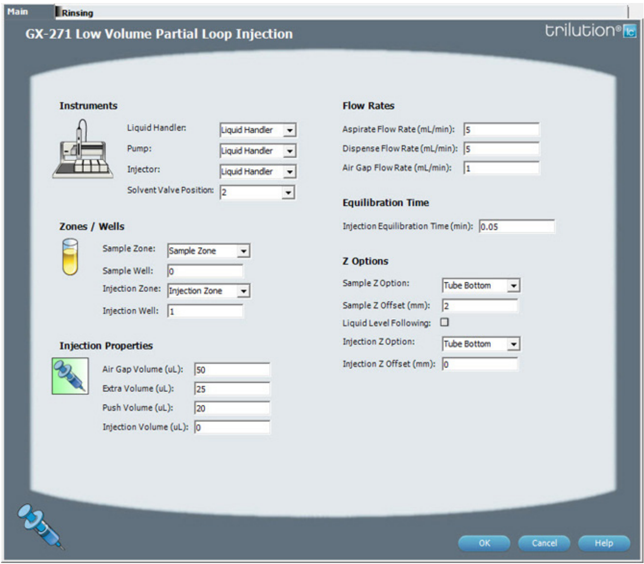
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX TRANSFER PROPERTIES - RINSING CONTINUED ON PAGE 410

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-271 Low Volume Partial Loop Injection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

GX-271 Low Volume Partial Loop Injection Properties - Main

GX-271 Low Volume Partial Loop Injection Properties - Rinsing

GX-271 Low Volume Partial Loop Injection - Sequence of Steps

GX-271 Low Volume Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-271 Low Volume Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler

GX-271 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 413

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	25 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-271 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 414

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-271 Low Volume Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

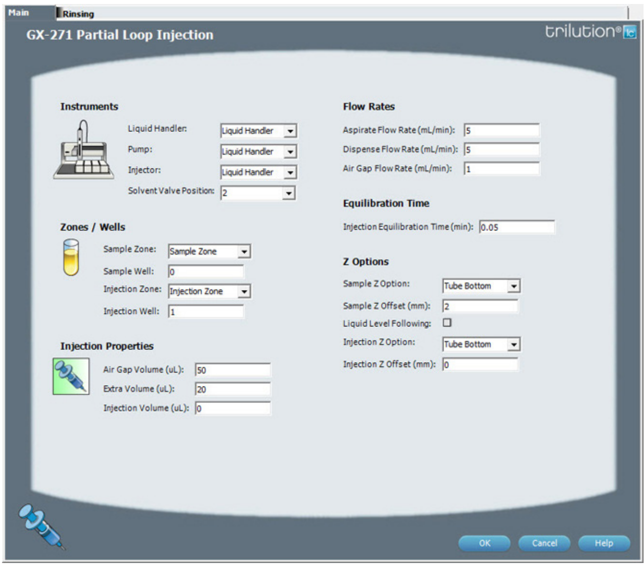
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–2.	1

GX-271 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 415

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-271 Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

GX-271 Partial Loop Injection Properties - Main

GX-271 Partial Loop Injection Properties - Rinsing

GX-271 Partial Loop Injection - Sequence of Steps

GX-271 Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-271 Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-271 PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 419

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-271 Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

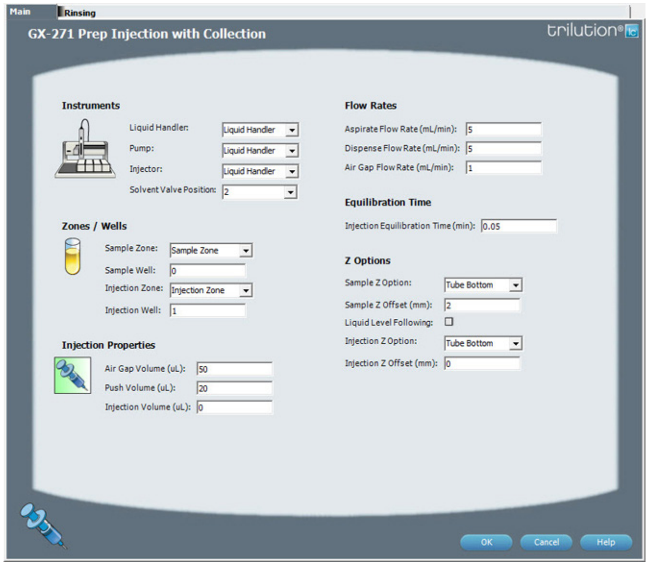
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse

GX-271 PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 420

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–2.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-271 Prep Injection with Collection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

GX-271 Prep Injection with Collection Properties - Main

GX-271 Prep Injection with Collection Properties - Rinsing

GX-271 Prep Injection with Collection - Sequence of Steps

GX-271 Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch fraction collection valve to COLLECT for 2 seconds.
6. Lower probe into well to Drain Z Option and Drain Z Offset.
7. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
8. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.

3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

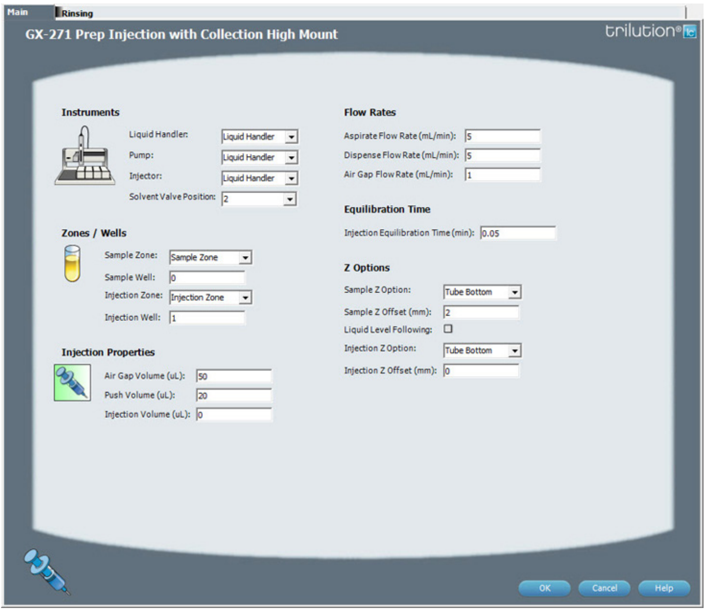
1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-271 Prep Injection with Collection High Mount

This task is used when doing injection and fraction collection on the same bed. It rinses the probe and then it performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop. It includes a rinse of the fraction collection valve for a user-defined duration after the injection.



For more information about the properties on each tab, refer to:

GX-271 Prep Injection with Collection High Mount Properties - Main on page 425

GX-271 Prep Injection with Collection High Mount Properties - Rinsing on page 426

GX-271 Prep Injection with Collection High Mount - Sequence of Steps on page 423

GX-271 Prep Injection with Collection High Mount - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse
6. Fraction Collection Valve Flush

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move Z to Z Safe Height.
4. Move to Inside Rinse Well in Inside Rinse Zone.
5. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
6. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Rinse Flow Rate.
7. Dispense Rinse Volume at Rinse Flow Rate.
8. Move Z to Z Safe Height.

LIST OF TASKS

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

FRACTION COLLECTION VALVE FLUSH

1. Move Z to Z Safe Height.
2. Move to Drain Well in Drain Zone.

3. Lower probe into well to Drain Z Option and Drain Z Offset.
4. Switch fraction collection valve to COLLECT for Fraction Collection Valve Rinse Time then switch the fraction collection valve to DIVERT.
5. Move Z to Z Safe Height.

GX-271 Prep Injection with Collection High Mount Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Push Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2

GX-271 PREP INJECTION WITH COLLECTION HIGH MOUNT PROPERTIES - MAIN CONTINUED ON PAGE 426

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-271 Prep Injection with Collection High Mount Properties - Rinsing

For information on Rinse Positions, refer to Rinse Locations on page 621.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm

GX-271 PREP INJECTION WITH COLLECTION HIGH MOUNT PROPERTIES - RINSING CONTINUED ON PAGE 427

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Fraction Collection Valve Rinse Time	After the valve switches to COLLECT, the length of time the valve is rinsed before switching the valve back to DIVERT.	0.1 min
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–2.	2
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-271 PREP INJECTION WITH COLLECTION HIGH MOUNT PROPERTIES - RINSING CONTINUED ON PAGE 428

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-271 Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Push Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min

GX-271 PREP INJECTION WITH COLLECTION PROPERTIES - MAIN CONTINUED ON PAGE 429

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-271 Prep Injection with Collection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

GX-271 PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 430

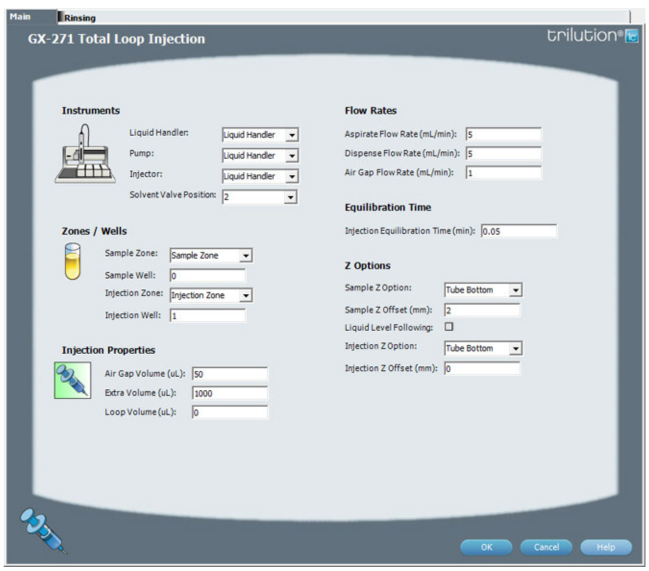
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–2.	2
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-271 PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 431

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-271 Total Loop Injection

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

GX-271 Total Loop Injection Properties - Main

GX-271 Total Loop Injection Properties - Rinsing

GX-271 Total Loop Injection - Sequence of Steps

GX-271 Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject

4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Loop Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense Loop Volume + 1/2 Extra Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

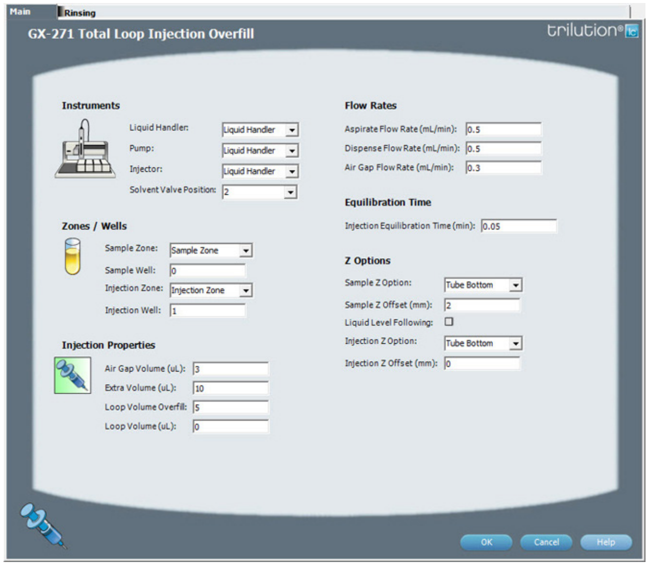
OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.

5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-271 Total Loop Injection Overfill

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

GX-271 Total Loop Injection Overfill Properties - Main

GX-271 Total Loop Injection Overfill Properties - Rinsing

GX-271 Total Loop Injection Overfill - Sequence of Steps

GX-271 Total Loop Injection Overfill - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.

5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-271 Total Loop Injection Overfill Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Loop Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5
Loop Volume	The capacity of the installed sample loop.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-271 TOTAL LOOP INJECTION OVERFILL PROPERTIES - MAIN CONTINUED ON PAGE 436

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-271 Total Loop Injection Overfill Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	500 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–2.	1

GX-271 TOTAL LOOP INJECTION OVERFILL PROPERTIES - RINSING CONTINUED ON PAGE 437

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-271 Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Loop Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1

GX-271 TOTAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 438

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	1000 µL
Loop Volume	The capacity of the installed sample loop.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-271 Total Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

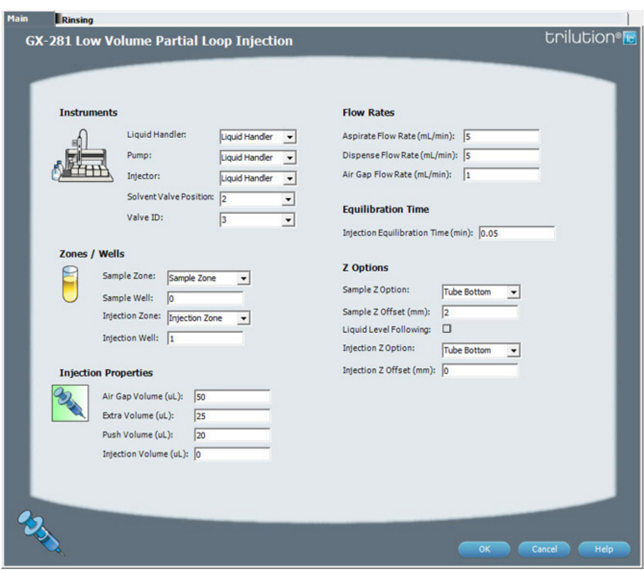
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–2.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-271 TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 440

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 Low Volume Partial Loop Injection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

GX-281 Low Volume Partial Loop Injection Properties - Main

GX-281 Low Volume Partial Loop Injection Properties - Rinsing

GX-281 Low Volume Partial Loop Injection - Sequence of Steps

GX-281 Low Volume Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

LIST OF TASKS

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-281 Low Volume Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	25 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX-281 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 443

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 Low Volume Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to Rinse Locations on page 621.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

GX-281 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 444

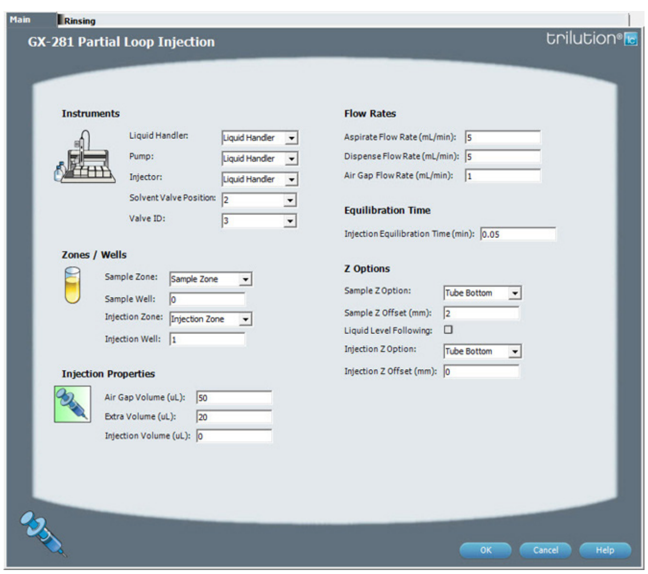
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 445

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

GX-281 Partial Loop Injection Properties - Main

GX-281 Partial Loop Injection Properties - Rinsing

GX-281 Partial Loop Injection - Sequence of Steps

GX-281 Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate

3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.

3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-281 Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume and Injection Volume in the sample loop.	0.05 min

GX-281 PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 448

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

GX-281 PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 449

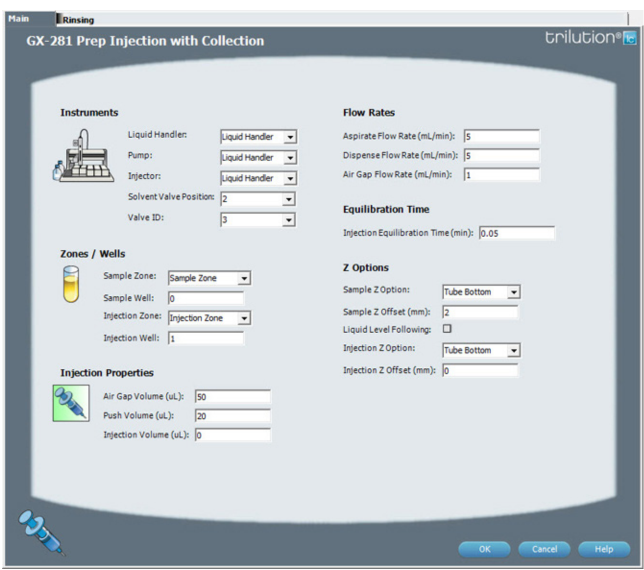
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 450

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 Prep Injection with Collection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

GX-281 Prep Injection with Collection Properties - Main

GX-281 Prep Injection with Collection Properties - Rinsing

GX-281 Prep Injection with Collection - Sequence of Steps

GX-281 Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate

3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch fraction collection valve to COLLECT for 2 seconds.
6. Lower probe into well to Drain Z Option and Drain Z Offset.
7. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
8. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Injection Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-281 Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Injection Volume and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Push Volume in the sample loop.	0.05 min

GX-281 PREP INJECTION WITH COLLECTION PROPERTIES - MAIN CONTINUED ON PAGE 453

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 Prep Injection with Collection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

GX-281 PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 454

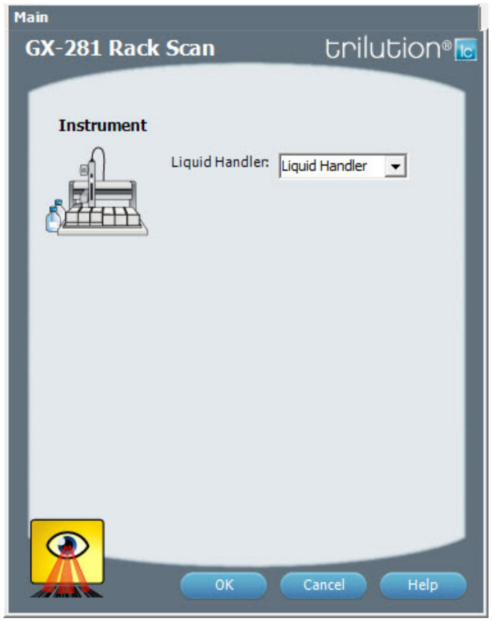
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	2
Rinse Well 1 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 455

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 Rack Scan

This task scans the racks on the locator plate of the GX-281 Liquid Handler for the purpose of ensuring that the rack hardware setup matches the software rack (bed layout) setup.



For more information about the properties on each tab, refer to:

GX-281 Rack Scan Properties on page 456

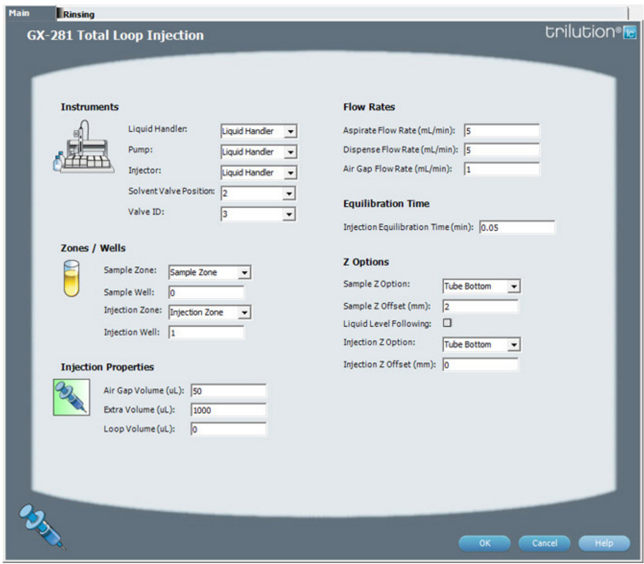
LIST OF TASKS

GX-281 Rack Scan Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler

GX-281 Total Loop Injection

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

GX-281 Total Loop Injection Properties - Main

GX-281 Total Loop Injection Properties - Rinsing

GX-281 Total Loop Injection - Sequence of Steps

GX-281 Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.
4. Aspirate Loop Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Switch solvent valve to Solvent Valve Position and dispense Loop Volume + 1/2 Extra Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
2. Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3. Move Z to Z Safe Height

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-281 Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Extra Volume and Loop Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Loop Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Loop Volume.	1000 µL
Loop Volume	The capacity of the installed sample loop.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume and Loop Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Extra Volume and Loop Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Extra Volume and Loop Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 TOTAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 459

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 Total Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

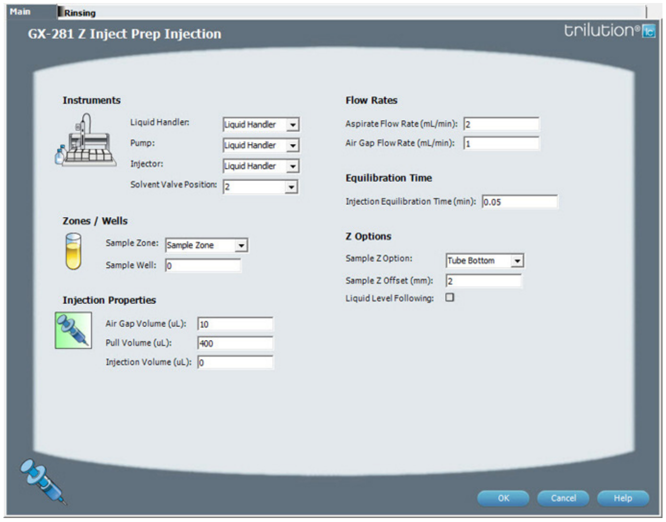
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the GX Solvent System is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1

GX-281 TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 460

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Rinse Well 1 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	The desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 Z Inject Prep Injection

This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

GX-281 Z Inject Prep Injection Properties - Main

GX-281 Z Inject Prep Injection Properties - Rinsing

GX-281 Z Inject Prep Injection - Sequence of Steps

GX-281 Z Inject Prep Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Inside Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
5. Move Z to Z Safe Height.

ASPIRATE

1. Switch injection valve to LOAD.
2. Wait 0.02 min.
3. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
4. Move to Sample Well in Sample Zone.
5. Lower probe into well to Sample Z Option and Sample Z Offset.
6. Aspirate Injection Volume at Aspirate Flow Rate.

7. Move Z to Z Safe Height.
8. Aspirate Pull Volume at Aspirate Flow Rate.
9. Wait injection equilibration time.
10. Synchronize.

INJECT

1. Switch injection valve to INJECT.
2. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume.
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-281 Z Inject Prep Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler

GX-281 Z INJECT PREP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 463

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	10 µL
Pull Volume	A volume of air used to pull the Injection Volume into the sample loop.	400 µL Note: This default was determined using a 125 mm Z travel height, a 0.8 mm ID probe, and 35.6 cm (14 in.) of 0.8 mm ID tubing between the probe and the injection valve.
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Pull Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 Z Inject Prep Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

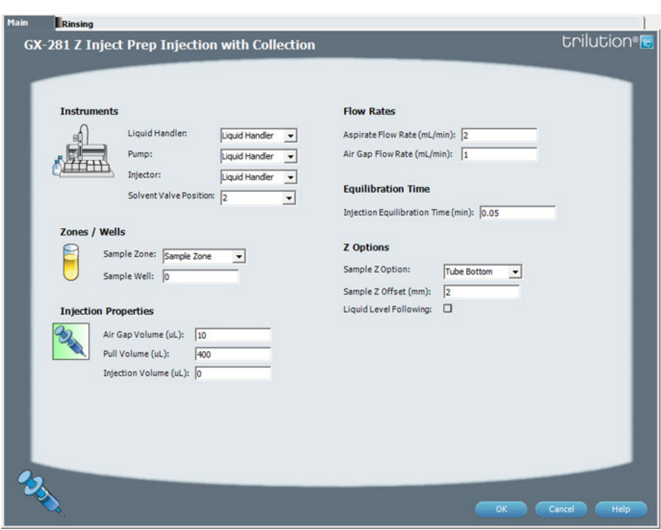
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX-281 Z INJECT PREP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 465

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 Z Inject Prep Injection with Collection

This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

GX-281 Z Inject Prep Injection with Collection Properties - Main

GX-281 Z Inject Prep Injection with Collection Properties - Rinsing

GX-281 Z Inject Prep Injection with Collection - Sequence of Steps

GX-281 Z Inject Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Inside Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at 5 mL/min.
5. Move Z to Z Safe Height.
6. Switch fraction collection valve to COLLECT for 2 seconds.

ASPIRATE

1. Switch injection valve to LOAD.
2. Wait 0.02 min.
3. Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
4. Move to Sample Well in Sample Zone.
5. Lower probe into well to Sample Z Option and Sample Z Offset.
6. Aspirate Injection Volume at Aspirate Flow Rate.
7. Move Z to Z Safe Height.
8. Aspirate Pull Volume at Aspirate Flow Rate.
9. Wait injection equilibration time.
10. Synchronize.

INJECT

1. Switch injection valve to INJECT.
2. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Inside Rinse Flow Rate.

5. Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to rinse station/well 1 in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Switch Rinse Pump on at Rinse Pump Speed.
5. Switch solvent valve to Rinse Well 1 Solvent Valve Position and dispense Outside Rinse Volume at Outside Rinse Flow Rate. If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume
6. Switch Rinse Pump off.
7. Move Z to Z Safe Height.
8. Repeat steps 2–7 for the Number of Rinse Stations, incrementing the rinse station/well for each rinse station.

GX-281 Z Inject Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Liquid Handler
Injector	The injector or injection module that the task will affect.	Liquid Handler
Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	10 µL
Pull Volume	A volume of air used to pull the Injection Volume into the sample loop.	400 µL Note: This default was determined using a 125 mm Z travel height, a 0.8 mm ID probe, and 35.6 cm (14 in.) of 0.8 mm ID tubing between the probe and the injection valve.
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Pull Volume in the sample loop.	0.05 min

GX-281 Z INJECT PREP INJECTION WITH COLLECTION PROPERTIES - MAIN CONTINUED ON PAGE 468

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Sample Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 Z Inject Prep Injection with Collection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min

GX-281 Z INJECT PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 469

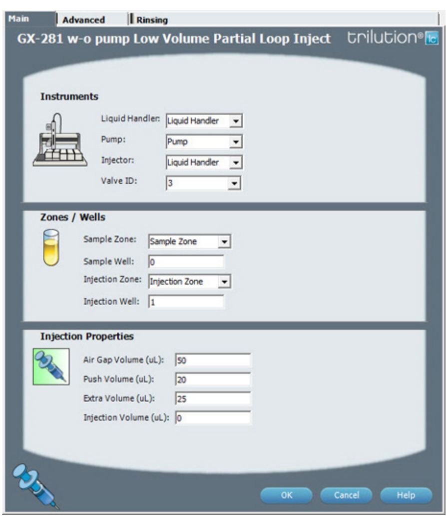
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 Z INJECT PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 470

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX-281 w-o pump Low Volume Partial Loop Inject

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

GX-281 w-o pump Low Volume Partial Loop Inject Properties - Main
GX-281 w-o pump Low Volume Partial Loop Inject Properties - Advanced
GX-281 w-o pump Low Volume Partial Loop Inject Properties - Rinsing
GX-281 w-o pump Low Volume Partial Loop Inject - Sequence of Steps

GX-281 w-o pump Low Volume Partial Loop Inject - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject

4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Aspirate Push Volume at Aspirate Flow Rate from Reservoir.
3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Safe Height.

GX-281 w-o pump Low Volume Partial Loop Inject Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 W-O PUMP LOW VOLUME PARTIAL LOOP INJECT PROPERTIES - ADVANCED CONTINUED ON PAGE 473

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 w-o pump Low Volume Partial Loop Inject Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	25 µL
Injection Volume	The volume of sample to be injected.	0 µL

GX-281 w-o pump Low Volume Partial Loop Inject Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

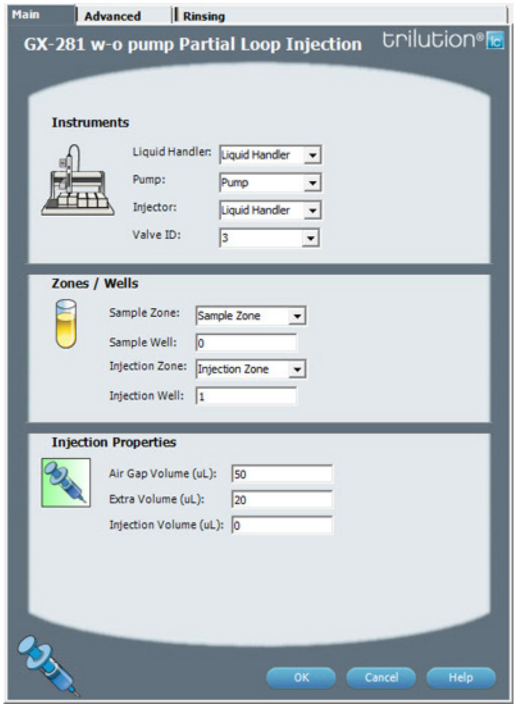
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

GX-281 W-O PUMP LOW VOLUME PARTIAL LOOP INJECT PROPERTIES - RINSING CONTINUED ON PAGE 474

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout ; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 w-o pump Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

GX-281 w-o pump Partial Loop Injection Properties - Main on page 477

GX-281 w-o pump Partial Loop Injection Properties - Advanced

GX-281 w-o pump Partial Loop Injection Properties - Rinsing

GX-281 w-o pump Partial Loop Injection - Sequence of Steps

GX-281 w-o pump Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Safe Height.

GX-281 w-o pump Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume and Injection Volume in the sample loop.	0.05 min

GX-281 W-O PUMP PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 477

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 w-o pump Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler

GX-281 W-O PUMP PARTIAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 478

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL

GX-281 w-o pump Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

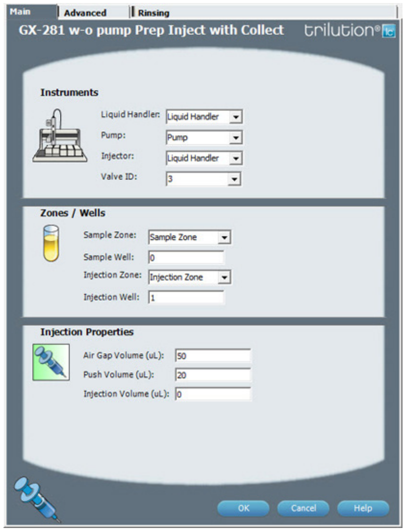
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 W-O PUMP PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 479

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 w-o pump Prep Inject with Collect

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

GX-281 w-o pump Prep Inject with Collect Properties - Main
GX-281 w-o pump Prep Inject with Collect Properties - Advanced
GX-281 w-o pump Prep Inject with Collect Properties - Rinsing
GX-281 w-o pump Prep Inject with Collect Properties - Sequence of Steps

GX-281 w-o pump Prep Inject with Collect - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Switch fraction collection valve to COLLECT for 2 seconds.
5. Lower probe into well to Drain Z Option and Drain Z Offset.
6. Home dilutor.
7. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Aspirate Push Volume at Aspirate Flow Rate from Reservoir.
3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Aspirate Injection Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.

4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Safe Height.

GX-281 w-o pump Prep Inject with Collect Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 W-O PUMP PREP INJECT WITH COLLECT PROPERTIES - ADVANCED CONTINUED ON PAGE 482

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 w-o pump Prep Inject with Collect Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Injection Volume and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL

GX-281 w-o pump Prep Inject with Collect Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

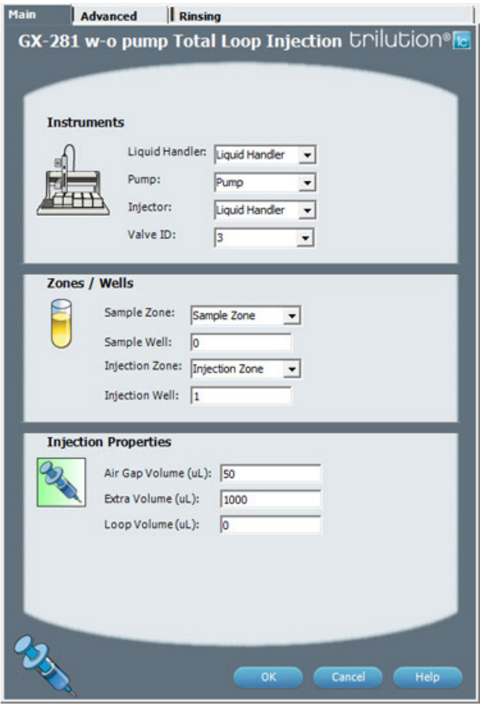
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse

GX-281 W-O PUMP PREP INJECT WITH COLLECT PROPERTIES - RINSING CONTINUED ON PAGE 483

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 w-o pump Total Loop Injection

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

GX-281 w-o pump Total Loop Injection Properties - Main on page 486
GX-281 w-o pump Total Loop Injection Properties - Advanced
GX-281 w-o pump Total Loop Injection Properties - Rinsing
GX-281 w-o pump Total Loop Injection Properties - Sequence of Steps

GX-281 w-o pump Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate Loop Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense Loop Volume + 1/2 Extra Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
3. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Safe Height.

GX-281 w-o pump Total Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume and Loop Volume in the sample loop.	0.05 min

GX-281 W-O PUMP TOTAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 486

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Extra Volume and Loop Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Extra Volume and Loop Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 w-o pump Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler

GX-281 W-O PUMP TOTAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 487

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone from which the Extra Volume and Loop Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Loop Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Loop Volume.	1000 µL
Loop Volume	The capacity of the installed sample loop.	0 µL

GX-281 w-o pump Total Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

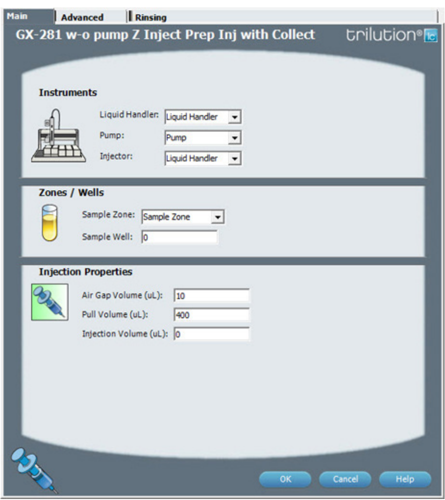
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 W-O PUMP TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 488

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 w-o pump Z Inject Prep Inj with Collect

This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Main
GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Advanced
GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Rinsing
GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Sequence of Steps

GX-281 w-o pump Z Inject Prep Inj with Collect - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Inside Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Move Z to Z Safe Height.
6. Switch fraction collection valve to COLLECT for 2 seconds.

ASPIRATE

1. Switch injection valve to LOAD.
2. Wait 0.02 min.
3. Aspirate Air Gap Volume at Air Gap Flow Rate.
4. Move to Sample Well in Sample Zone.
5. Lower probe into well to Sample Z Option and Sample Z Offset.
6. Aspirate Injection Volume at Aspirate Flow Rate.
7. Move Z to Z Safe Height.
8. Aspirate Pull Volume at Aspirate Flow Rate.
9. Wait Injection Equilibration Time.
10. Synchronize.

INJECT

1. Switch injection valve to INJECT.
2. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
6. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.

4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Safe Height.

GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which the Injection Volume and Pull Volume move into the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Pull Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	10 µL

GX-281 W-O PUMP Z INJECT PREP INJ WITH COLLECT PROPERTIES - MAIN CONTINUED ON PAGE 491

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	400 µL Note: This default was determined using a 125 mm Z travel height, a 0.8 mm ID probe, and 35.6 cm (14 in.) of 0.8 mm ID tubing between the probe and the injection valve.
Injection Volume	The volume of sample to be injected.	0 µL

GX-281 w-o pump Z Inject Prep Inj with Collect Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

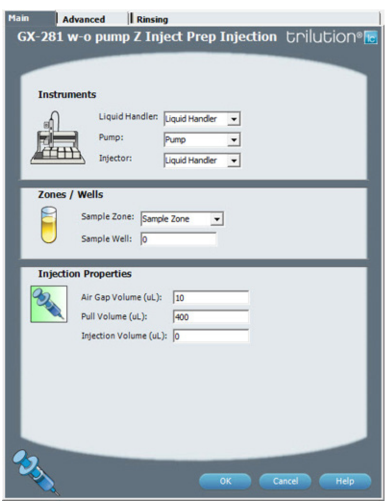
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min

GX-281 W-O PUMP Z INJECT PREP INJ WITH COLLECT PROPERTIES - RINSING CONTINUED ON PAGE 492

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 w-o pump Z Inject Prep Injection

This task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

GX-281 w-o pump Z Inject Prep Injection Properties - Main

GX-281 w-o pump Z Inject Prep Injection Properties - Advanced

GX-281 w-o pump Z Inject Prep Injection Properties - Rinsing

GX-281 w-o pump Z Inject Prep Injection Properties - Sequence of Steps

GX-281 w-o pump Z Inject Prep Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which the Injection Volume and Pull Volume move into the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	The time the program waits after loading the Injection Volume and Pull Volume into the sample loop.	0.05 min

GX-281 W-O PUMP Z INJECT PREP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 493

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

GX-281 w-o pump Z Inject Prep Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	10 µL
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	400 µL Note: This default was determined using a 125 mm Z travel height, a 0.8 mm ID probe, and 35.6 cm (14 in.) of 0.8 mm ID tubing between the probe and the injection valve.
Injection Volume	The volume of sample to be injected.	0 µL

GX-281 w-o pump Z Inject Prep Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1

GX-281 W-O PUMP Z INJECT PREP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 494

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 w-o pump Z Inject Prep Injection Properties - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate

3. Inject
4. Inside Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Move Z to Z Safe Height.

ASPIRATE

1. Switch injection valve to LOAD.
2. Wait 0.02 min.
3. Aspirate Air Gap Volume at Air Gap Flow Rate.
4. Move to Sample Well in Sample Zone.
5. Lower probe into well to Sample Z Option and Sample Z Offset.
6. Aspirate Injection Volume at Aspirate Flow Rate.
7. Move Z to Z Safe Height.
8. Aspirate Pull Volume at Aspirate Flow Rate.
9. Wait Injection Equilibration Time.
10. Synchronize.

INJECT

1. Switch injection valve to INJECT.
2. Move Z to Z Safe Height.

INSIDE RINSE

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
6. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

LIST OF TASKS

3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Safe Height.

Gradient Task

This task adds a gradient point to a template in the control workspace.

Use the following steps to add this task to the control:

1. Ensure that you have mobile phase pumps in the configuration.
2. Drag the Gradient Task and drop it in the workspace.
3. In the Flow Rate field, type the desired total flow rate.

For more information, refer to Add a Point to the Mobile Phase Template.

Gradient Task with Variables

This task adds a gradient with variables mobile phase to the control.

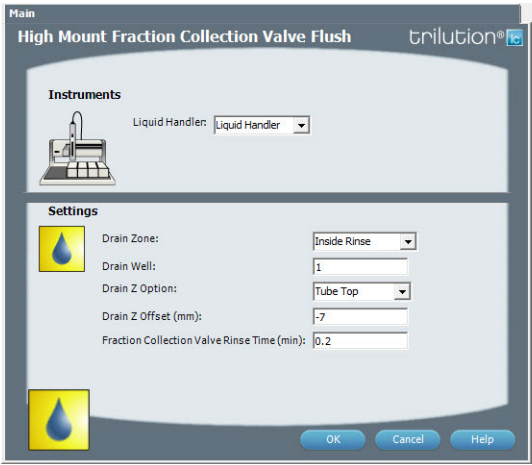
How to Use the Gradient Task with Variables

1. Ensure that there are mobile phase pumps in the configuration.
2. Drag the Gradient Task with Variables and drop it in the workspace.
3. In the Flow Rate field, type the desired total flow rate or a variable.
4. In the Time field, type the time at which the pumps will begin pumping at the specified flow rate and composition conditions or a variable.
5. In the Concentration % column, type the percent composition for the first pump or a variable. The software calculates the percent composition for additional pumps.

NOTE	A variable is created by typing # and then the variable name. The variable value is satisfied in the sample list. For more information, refer to Create a New Variable (Method Builder).

High Mount Fraction Collection Valve Flush

This task rinses the fraction collection valve and probe for a user-specified duration.



For more information about the task properties, refer to:

High Mount Fraction Collection Valve Flush Properties on page 497

High Mount Fraction Collection Valve Flush - Sequence of Steps

High Mount Fraction Collection Valve Flush - Sequence of Steps

1. Move Z to Z Safe Height.
2. Move to Drain Well in Drain Zone.
3. Lower probe into well to Drain Z Option and Drain Z Offset.
4. Switch fraction collection valve to COLLECT for Fraction Collection Valve Rinse Time then switch the fraction collection valve to DIVERT.
5. Move Z to Z Safe Height.

High Mount Fraction Collection Valve Flush Properties

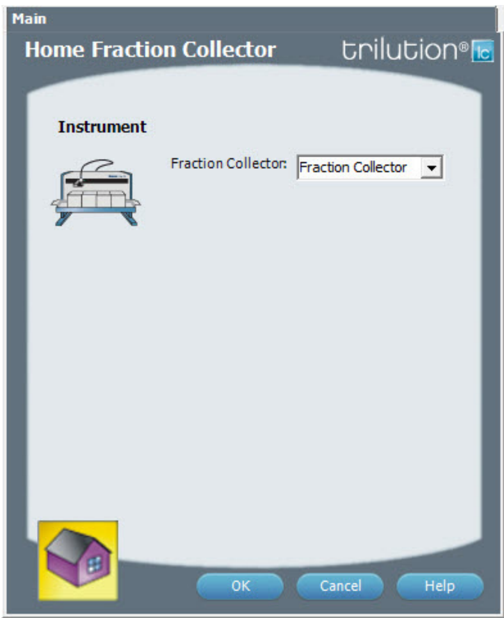
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Drain Zone	The zone in which the fraction collection valve and probe are rinsed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of six defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top

HIGH MOUNT FRACTION COLLECTION VALVE FLUSH PROPERTIES CONTINUED ON PAGE 498

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Fraction Collection Valve Rinse Time	After the valve switches to COLLECT, the length of time the valve and probe are rinsed before switching the valve back to DIVERT.	0.2 min

Home Fraction Collector

This task homes the specified Fraction Collector.



For more information about the task properties, refer to:

Home Fraction Collector Properties on page 498

Home Fraction Collector - Sequence of Steps

Home Fraction Collector - Sequence of Steps

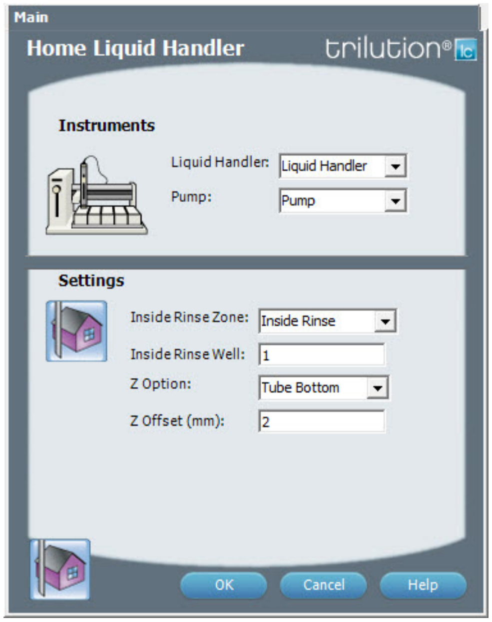
Move to home position at the left rear of the X and Y matrix.

Home Fraction Collector Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Collector	The fraction collector that the task will affect.	Fraction Collector

Home Liquid Handler

This task homes the specified liquid handler.



For more information about the task properties, refer to:

[Home Liquid Handler Properties on page 499](#)

Home Liquid Handler - Sequence of Steps

Home Liquid Handler - Sequence of Steps

1. Home the X/Y/Z of the Liquid Handler.
2. Move the probe to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe to Z Option and Z Offset.
4. Home dilutor.
5. Move Z to Z Safe Height.

Home Liquid Handler Properties

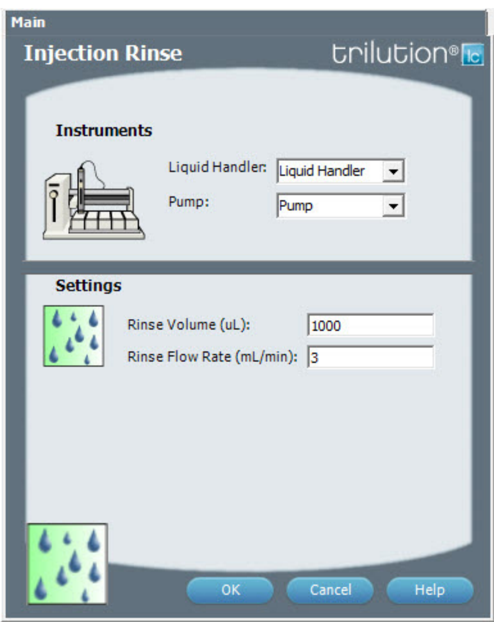
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Inside Rinse Zone	The zone at which the dilutor is homed.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1

HOME LIQUID HANDLER PROPERTIES CONTINUED ON PAGE 500

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Z Option	One of five defined reference points used when performing the move: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	2 mm

Injection Rinse

This task rinses the injection port and must be synchronized with a Move to Sample Location task to move the probe to the injection port prior to rinsing.



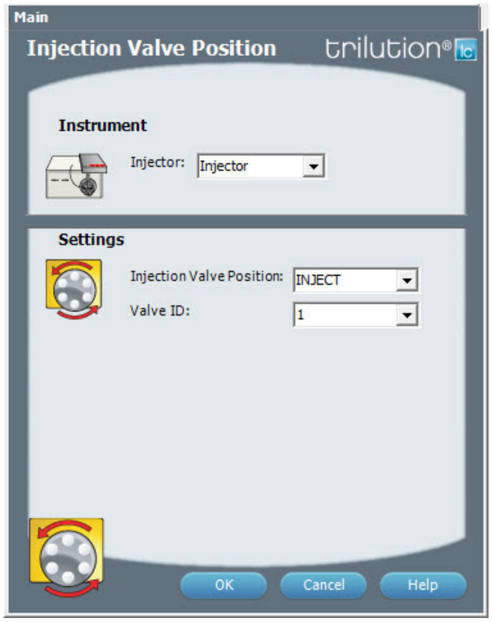
For more information about the task properties, refer to:
Injection Rinse Properties

Injection Rinse Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Rinse Volume	The quantity of liquid dispensed.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the injection port.	3 mL/min

Injection Valve Position

This task sets the injection valve position on the Injector to either LOAD or INJECT.



For more information about the task properties, refer to:

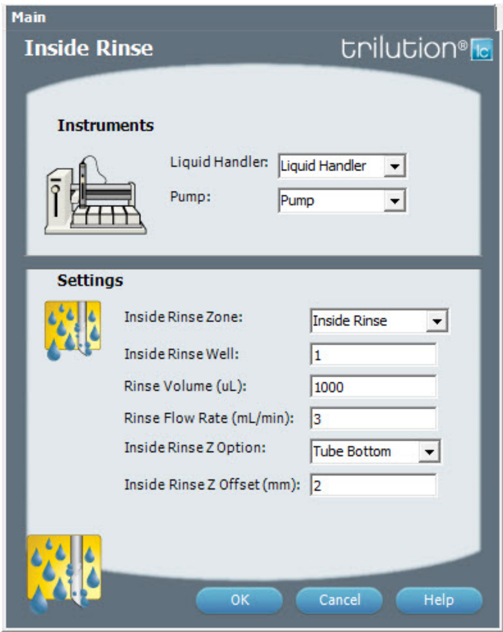
Injection Valve Position Properties on page 501

Injection Valve Position Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injector	The injector or injection module that the task will affect.	Injector
Injection Valve Position	Select from LOAD or INJECT.	INJECT
Valve ID	Enter 1 to for the GX Z Injection Module. Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	1

Inside Rinse

This task moves to the rinse station and then rinses the inside of the probe.



For more information about the task properties, refer to:

Inside Rinse Properties on page 502

Inside Rinse - Sequence of Steps

Inside Rinse - Sequence of Steps

1. Move Z to Z Safe Height.
2. Move to Inside Rinse Well in Inside Rinse Zone.
3. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4. Home dilutor.
5. Switch dilutor valve to reservoir and aspirate Rinse Volume or syringe capacity at Rinse Flow Rate.
6. Switch dilutor valve to probe and dispense Rinse Volume or syringe capacity at Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.

Inside Rinse Properties

For information on Rinse Positions, refer to Rinse Locations on page 621.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Inside Rinse Zone	The zone to which the Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	3 mL/min

INSIDE RINSE PROPERTIES CONTINUED ON PAGE 503

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout ; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm

Isocratic

To add an isocratic mobile phase template to the control:

1. Ensure that you have mobile phase pumps in the configuration.
2. Drag the Isocratic template and drop it in the workspace.
3. Specify the flow rate or a variable. A variable is created by typing # and then the variable name. The variable value is satisfied in the sample list. For more information, refer to Create a New Variable (Method Builder).

For more information, refer to How to Create Gradient or Isocratic Conditions on page 98.

Linear Gradient with Column Wash Out

To add a linear gradient with column wash out mobile phase template to the control:

1. Ensure that you have mobile phase pumps in the configuration.
2. Drag the Linear Gradient with Column Wash Out template and drop it in the workspace.
3. Specify the flow rate or a variable. A variable is created by typing # and then the variable name. The variable value is satisfied in the sample list. For more information, refer to Create a New Variable (Method Builder).

For more information, refer to How to Create Gradient or Isocratic Conditions on page 98.

Linear Gradient with No Column Wash Out

To add a linear gradient with no column wash out mobile phase template to the control:

1. Ensure that you have mobile phase pumps in the configuration.
2. Drag the **Linear Gradient with No Column Wash Out** template and drop it in the workspace.
3. Specify the flow rate or a variable. A variable is created by typing # and then the variable name. The variable value is satisfied in the sample list. For more information, refer to Create a New Variable (Method Builder).

For more information, refer to How to Create Gradient or Isocratic Conditions on page 98.

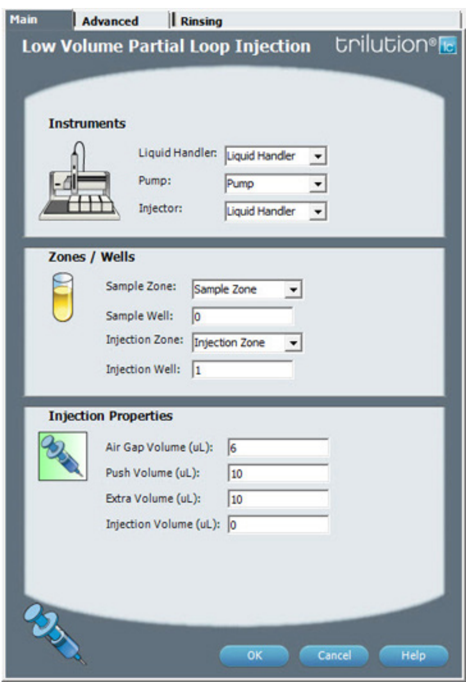
Log Variables

This task records the values used for local and global variables at the specified time(s) during a run and stores them in a spreadsheet, which always includes columns for Time Stamp, Sample Line, Method Name, Method Iteration, and Notes. The file is automatically named VARIABLE LOG_YYYY-MM-DD HH-MM-SS_RUN NAME.XML, where _RUN NAME is a user-supplied run name, and the file is stored in a Variable Logs folder at C:\Users\OS User Name\My Documents\TRILUTION LC x.x\Export\Variable Logs. To record the value for a variable, select the Log check box for the variable name in the Variable List. Global variables must be marked to be visible in the task or method (depending on the builder) to be available to be recorded.

Optionally, type notes in the Notes field to be recorded with the selected variables.

Low Volume Partial Loop Injection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

Low Volume Partial Loop Injection Properties - Main

Low Volume Partial Loop Injection Properties - Advanced

Low Volume Partial Loop Injection Properties - Rinsing

Low Volume Partial Loop Injection - Sequence of Steps

Low Volume Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject

4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1 Move Z to Z Safe Height.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone.

4 Lower probe into well to Drain Z Option and Drain Z Offset.

5 Home dilutor.

6 Move Z to Z Safe Height.

ASPIRATE

1 Aspirate Air Gap Volume at Air Gap Flow Rate.

2 Aspirate Push Volume at Aspirate Flow Rate from Reservoir.

3 Move to Sample Well in Sample Zone.

4 Lower probe into well to Sample Z Option and Sample Z Offset.

5 Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.

6 Move Z to Z Safe Height.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Dispense Extra Volume at Dispense Flow Rate.

4 Switch injection valve to LOAD.

5 Wait 1.2 sec.

6 Dispense Injection Volume + Push Volume at Dispense Flow Rate.

7 Wait Injection Equilibration Time.

8 Synchronize.

9 Switch injection valve to INJECT.

INJECTION PORT RINSE

1 Home dilutor.

2 Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.

3 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.

4 Repeat steps 2-3 until requested rinse volume is aspirated and dispensed.

5 Move Z to Z Safe Height.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.

5 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.

Low Volume Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 507

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

Low Volume Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

Low Volume Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 508

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	500 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Mass Spec Auto Tune

This task tunes the Flexar SQ 300 MS Detector across a specified mass range using a specified tune mix. Run this task using manual control (NOT as part of a method).

For information about the task properties, refer to:
Mass Spec Auto Tune Properties

Mass Spec Auto Tune Properties

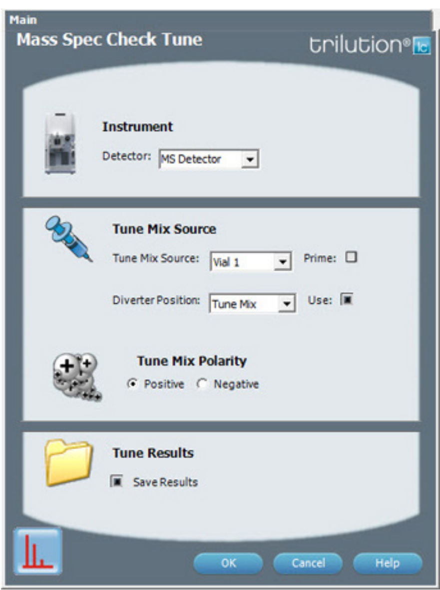
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Tune Mix Source	Select from Vial 1, Vial 2, Syringe, or External.	Vial 1
Prime	Select to prime the tubing between the Tune Mix Source and the diverter valve.	Cleared
Diverter Position	Select from Tune Mix or Sample.	Tune Mix
Tune Mass Settings	Select from Use Previous Settings (to use settings from the last positive and/or negative auto tune), Create New Positive Settings (to tune the MS Detector for positive ionization), or Create New Negative Settings (to tune the MS Detector for negative ionization). It may be necessary (and is necessary for the first auto tune) to run the auto tune twice: once for positive settings and once for negative settings. Default settings are for use with the tune mix Electrospray Calibrant Solution, 100 mL (part number 18007062), which must be diluted 1:10 in 95%/5% (v/v) Acetonitrile/Water.	Use Previous Settings
Use Previous Settings		
Tune Mix Polarity	When Use Previous Settings is selected, select from Positive or Negative.	Positive
Create New Positive Settings or Create New Negative Settings		
Name	Optionally, name the peaks to be found at the masses present in the tune mix. By default, they are named by number 1–7.	

MASS SPEC AUTO TUNE PROPERTIES CONTINUED ON PAGE 510

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mass	Enter the mass values for the peaks that should be present in the tune mix. Default settings are for use with the tune mix Electrospray Calibrant Solution, 100 mL (part number 18007062), which must be diluted 1:10 in 95%/5% (v/v) Acetonitrile/Water.	m/z
Area	Enter a value that will be used as pass/fail criteria for the auto tune. The peak with the largest area of the peaks found in the tune is assigned a value of 100% by the software. If, for example, a value of 30 is entered for the Area for a peak, then the area for that peak must be greater than or equal to 30% of the peak with the largest area. If it is not, that will be reflected in the check tune report.	%
Capillary Exit	Enter a value that will be used as a capillary exit voltage for the specified mass. The Capillary Exit Voltage has the function of pushing ions of the same sign away from the exit as they emerge from the capillary. As a general trend, a higher capillary exit voltage increases fragmentation of the low mass ions, and increases abundance of the high mass ions.	V
Use	Select for each mass to use for the auto tune. By default, six masses are selected for use with the tune mix Electrospray Calibrant Solution, 100 mL (part number 18007062), which must be diluted 1:10 in 95%/5% (v/v) Acetonitrile/Water.	

Mass Spec Check Tune

This task verifies that the Flexar SQ 300 MS Detector is tuned across a specified mass range using a specified tune mix. Run this task using manual control (NOT as part of a method).



For information about the task properties, refer to:

Mass Spec Check Tune Properties

Mass Spec Check Tune Properties

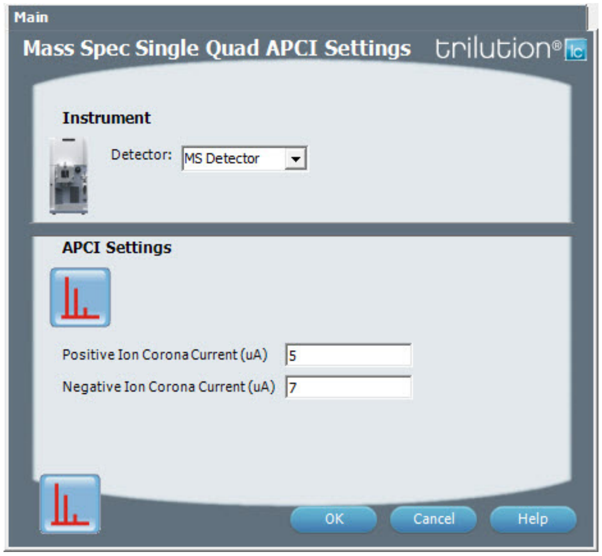
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Tune Mix Source	Select from Vial 1, Vial 2, Syringe, or External.	Vial 1
Prime	Select to prime the tubing between the Tune Mix Source and the diverter valve.	Cleared
Diverter Position	Select Tune Mix or Sample.	Tune Mix
Use	By default, the check tune uses the diverter valve.	Selected
Tune Mix Polarity	Select Positive or Negative.	Positive

MASS SPEC CHECK TUNE PROPERTIES CONTINUED ON PAGE 511

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Save Results	When selected, the results of the check tune will be saved and accessible from the Tune/ Diagnostics tab in the Results. When cleared, the results of the check tune will not be saved.	Selected

Mass Spec Single Quad APCI Settings

This task changes the corona currents used when collecting data.



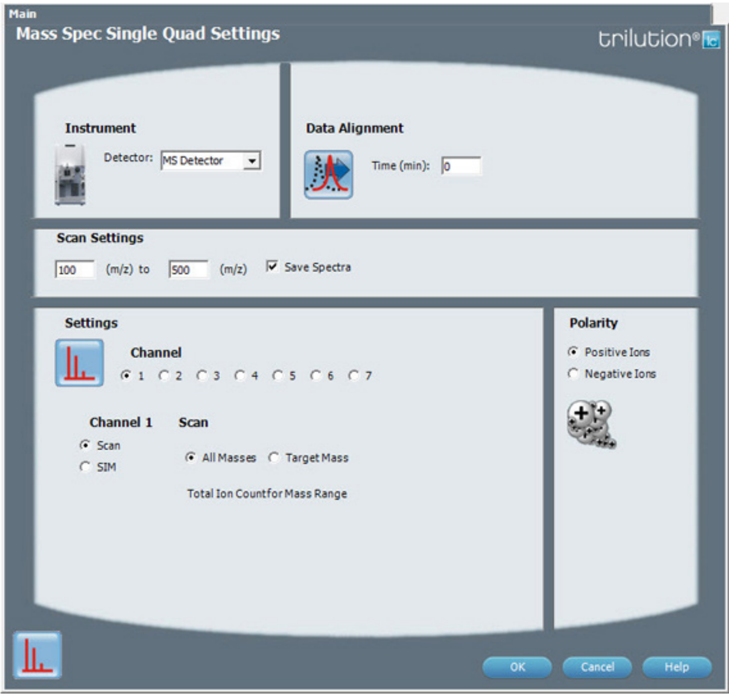
For information about the task properties, refer to:
Mass Spec Single Quad APCI Settings Properties

Mass Spec Single Quad APCI Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Positive Ion Corona Current	Changes the positive ion corona current used when collecting data.	5 uA
Negative Ion Corona Current	Changes the negative ion corona current used when collecting data.	7 uA

Mass Spec Single Quad Settings

This task sets the data collection parameters for each selected channel for the Flexar SQ 300 MS Detector.



For information about the task properties, refer to:
Mass Spec Single Quad Settings Properties

Mass Spec Single Quad Settings Properties

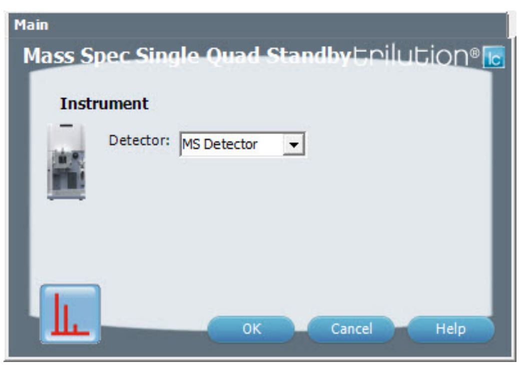
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Data Alignment Time	Shifts the retention time of the mass spec peak to align with the UV peak. Only positive values are allowed, which shifts the MS data trace to the right. If the primary channel is an MS channel, this value must be set to 0 (which is the default). Additionally, the value for Fraction Collection Delay Volume (on the liquid handler configuration property page) will need to be modified. Refer to How to Calculate Fraction Collection Delay Volume.	0 min
Scan Settings		
Range	Enter the beginning and ending masses in the full scan range. (Range limits 50–3000 m/z.) For the recommended scan range for each data rate, refer to Recommended Maximum Scan Range (High m/z - Low m/z).	100–500 m/z
Save Spectra	Select to save the spectral data from a scan at the end of the run. If choosing not to save spectra, the fraction spectra will still be saved.	Selected
Settings		
Channel	Select channel number for which data collection parameters will be set. Repeat for each channel to be used. (1–7)	1
Scan	Select to monitor a specified scan range.	Selected

MASS SPEC SINGLE QUAD SETTINGS PROPERTIES CONTINUED ON PAGE 513

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Scan All Masses	Select to display the data trace as the total ion count for the masses within the specified scan range. Do not associate an analysis with the data channel used for the scan of all masses. An analysis can be browsed in post-run and data re-analyzed.	Selected
Scan Target Mass	Select to display the data trace as the specified mass with one to three adducts (extracted ion or extracted ions). If Save Spectra was selected (it is by default), the data for the full scan range will be saved and can be viewed as spectral data.	Cleared
Scan Target Mass Target	Enter the mass.	100 amu
Scan Target Mass Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
SIM	Select to monitor a target mass with adducts (Selected Ion Monitoring).	Cleared
SIM Target	Enter the mass.	100 amu
SIM Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
Polarity		
Positive Ions	Select to form positive ions. Adduct values are added to the target when forming positive ions.	Selected
Negative Ions	Select to form negative ions. Adduct values are subtracted from the target when forming negative ions.	Cleared

Mass Spec Single Quad Standby

This task puts the Flexar SQ 300 MS Detector in standby.



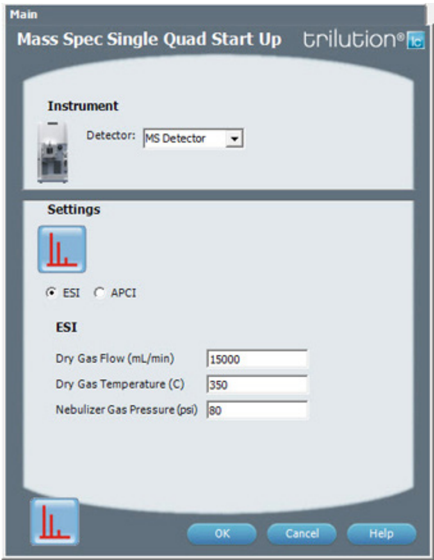
For information about the task properties, refer to:
Mass Spec Single Quad Standby Properties

Mass Spec Single Quad Standby Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector

Mass Spec Single Quad Start Up

This task sets the dry gas flow and temperature, the nebulizer gas pressure, and the APCI vaporizer temperature (if applicable) on the Flexar SQ 300 MS Detector.



For information about the task properties, refer to:

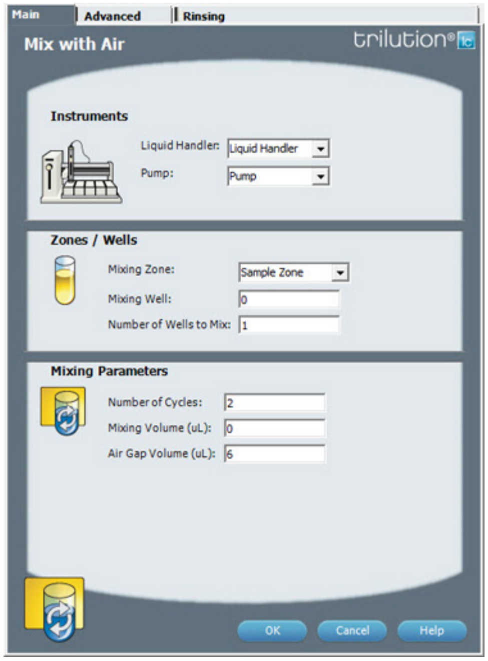
Mass Spec Single Quad Start Up Properties

Mass Spec Single Quad Start Up Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Settings - ESI		
Dry Gas Flow	Sets the flow rate of the drying gas flowing in direction counter to the analyte spray.	15000 mL/min
Dry Gas Temperature	Sets the temperature of the drying gas flowing in direction counter to the analyte spray.	350°C
Nebulizer Gas Pressure	Sets the pressure that controls the amount of gas flowing concentrically to the analyte spray to create sample aerosol.	80 psi
Settings - APCI		
Dry Gas Flow	Sets the flow rate of the drying gas flowing in direction counter to the analyte spray.	8000 mL/min
Dry Gas Temperature	Sets the temperature of the drying gas flowing in direction counter to the analyte spray.	300°C
Nebulizer Gas Pressure	Sets the pressure that controls the amount of gas flowing concentrically to the analyte spray to create sample aerosol.	25psi
APCI Vaporizer Temperature	Sets the APCI vaporizer temperature.	300°C
Wait for Pressure	When selected, sends all user-specified parameters immediately, except APCI Vaporizer Temperature, which is sent 30 seconds later. When cleared, sends all user-specified parameters immediately.	Selected

Mix with Air

This task aspirates air and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, refer to:

Mix with Air Properties - Main

Mix with Air Properties - Advanced

Mix with Air Properties - Rinsing

Mix with Air - Sequence of Steps

Mix with Air - Sequence of Steps

The following is an overview for the sequence of steps.

1. Mix
2. Inside Rinse
3. Outside Rinse

MIX

1. Move Z to Z Safe Height.
2. Move to Mixing Well in Mixing Zone.
3. Move Z to Z Safe Height.
4. Aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).
5. Aspirate Mixing Volume at Aspirate Flow Rate.
6. Lower probe to Dispense Z Option and Dispense Z Offset.
7. Dispense Mixing Volume at Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

INSIDE RINSE

1. Move to Inside Rinse Well in Inside Rinse Zone.
2. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3. Home dilutor.
4. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Repeat Number of Wells to Mix.

Mix with Air Properties - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which a volume air moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which a volume of air moves out of the probe.	10 mL/min
Dispense Z Option	One of five defined reference points used when delivering air to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering air to the bed.	2 mm
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Result Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Result Zone.	

Mix with Air Properties - Main

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Mixing Zone	The zone in which the Mixing Volume is mixed.	Sample Zone
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of air used as part of a mixing process.	0 µL
Air Gap Volume	The quantity of an air gap.	6 µL

Mix with Air Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

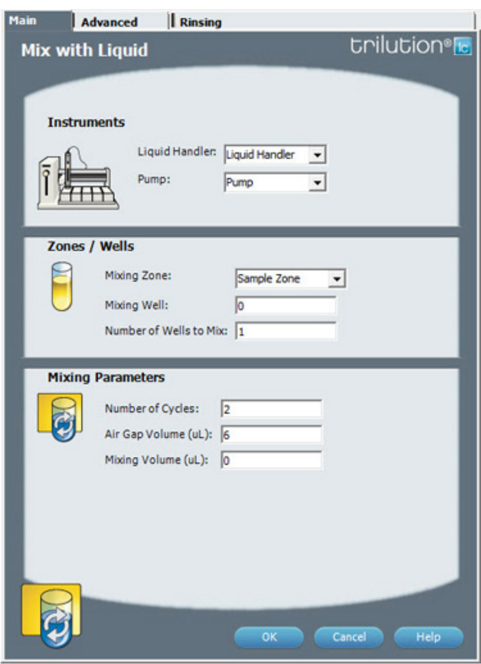
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

MIX WITH AIR PROPERTIES - RINSING CONTINUED ON PAGE 518

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Mix with Liquid

This task aspirates liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, refer to:

Mix with Liquid Properties - Main

Mix with Liquid Properties - Advanced

Mix with Liquid Properties - Rinsing

Mix with Liquid - Sequence of Steps

Mix with Liquid - Sequence of Steps

The following is an overview for the sequence of steps.

1. Mix
2. Inside Rinse
3. Outside Rinse

LIST OF TASKS

MIX

1. Move Z to Z Safe Height.
2. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Mixing Well in Mixing Zone.
4. Lower probe to Aspirate Z Option and Aspirate Z Offset.
5. Aspirate Mixing Volume at Aspirate Flow Rate.
6. Lower probe to Dispense Z Option and Dispense Z Offset.
7. Dispense Mixing Volume at Dispense Flow Rate.
8. Repeat steps 4–7 for Number of Cycles.
9. Move Z to Z Safe Height.

INSIDE RINSE

1. Move to Inside Rinse Well in Inside Rinse Zone.
2. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Repeat Number of Wells to Mix.

Mix with Liquid Properties - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which the Mixing Volume moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which the Mixing Volume moves out of the probe.	10 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min

MIX WITH LIQUID PROPERTIES - ADVANCED CONTINUED ON PAGE 520

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Aspirate Z Option	One of five defined reference points used when drawing liquids from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Aspirate Z Offset values to move up from the bottom. Top Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquids from the bed.	2 mm
Aspirate LLF	When selected the probe will follow the liquid down as it is aspirated from the Mixing Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Mixing Zone.	Cleared
Dispense Z Option	One of five defined reference points used when delivering liquids to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquids to the bed.	2 mm
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Mixing Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Mixing Zone.	Cleared

Mix with Liquid Properties - Main

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump

MIX WITH LIQUID PROPERTIES - MAIN CONTINUED ON PAGE 521

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Mixing Zone	The zone in which the Mixing Volume is mixed.	Sample Zone
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the task should repeat the commands related to mixing.	2
Air Gap Volume	The quantity of an air gap.	6 µL
Mixing Volume	The quantity of liquid used as part of a mixing process.	0 µL

Mix with Liquid Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

MIX WITH LIQUID PROPERTIES - RINSING CONTINUED ON PAGE 522

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Mobile Phase Tasks

The table below lists the mobile phase tasks.

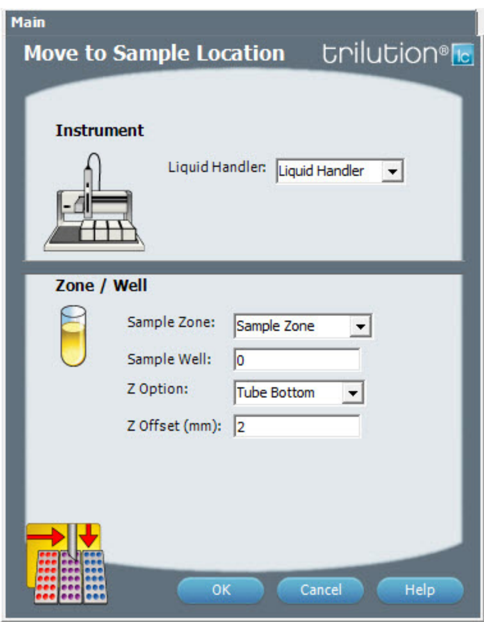
	GILSON TASK NAME AND DESCRIPTION
T	Gradient Task This task adds a gradient point to a template in the control workspace.

MOBILE PHASE TASKS CONTINUED ON PAGE 523

	GILSON TASK NAME AND DESCRIPTION
	Gradient Task with Variables This task adds a gradient with variables mobile phase to the control.
	Isocratic This task adds an isocratic mobile phase template to the control.
	Linear Gradient with Column Wash Out This task adds a linear gradient with column wash out mobile phase template to the control.
	Linear Gradient with No Column Wash Out This task adds a linear gradient with no column wash out mobile phase template to the control.
	Multi Linear Gradient with Step and Column Wash Out This task adds a multi linear gradient with step and column wash out mobile phase template to the control.
	Multi Linear Gradient with Column Wash Out This task adds a multiple linear gradient with column wash out mobile phase template to the control.

Move to Sample Location

This task moves the probe to a specified height in a specified well in a specified zone.



For more information about the task properties, refer to: Move to Sample Location Properties

Move to Sample Location Properties

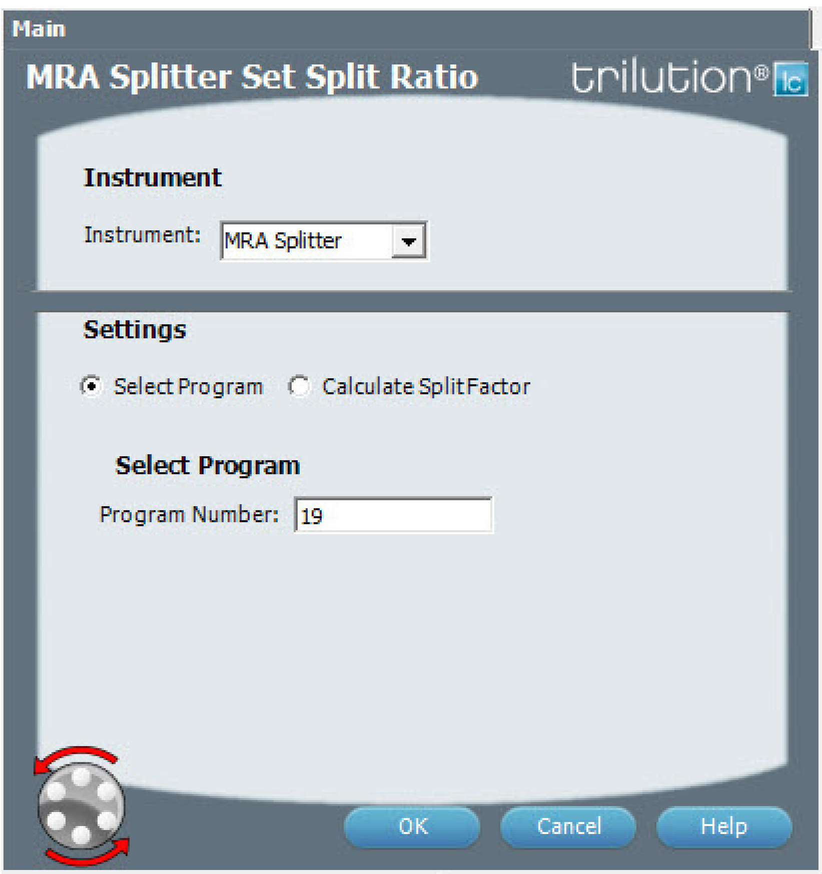
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Sample Zone	The zone to move to.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0

MOVE TO SAMPLE LOCATION PROPERTIES CONTINUED ON PAGE 524

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Z Option	One of five defined reference points used when performing the move: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	2 mm

MRA Splitter Set Split Ratio

This task readies the splitter for operation.



For information about the task properties, refer to:

MRA Splitter Set Split Ratio Properties on page 525

MRA Splitter Set Split Ratio Properties

<table>
<tr><th>PROPERTY NAME</th><th>DESCRIPTION</th><th>DEFAULT VALUE</th></tr>
<tr><td>Instrument</td><td>The instrument that the task will affect.</td><td>MRA Splitter</td></tr>
<tr><td colspan="3">Select Program - matches the local keypad control on the splitter by allowing the user to set the split factor.</td></tr>
<tr><td>Program Number</td><td>The program number to use.</td><td>19</td></tr>
<tr><td colspan="3">Calculate Split Factor - allows for entering the desired split ratio, and then the software automatically sets the splitter to the closest value.</td></tr>
<tr><td>Mobile Phase Flow Rate</td><td>When setting the split ratio, care should be taken to ensure resultant flow rates are compatible with the MS detector.
Enter values in the fields based on the following information:</td><td>20 mL/min</td></tr>
<tr><td>Desired Split Ratio</td><td>
Calculating a Split Ratio
Split Ratios are calculated using the following equation:
Actual Flow Rate ÷ HPLC Flow Rate from Table I x Corresponding Split Ratio from Table I
Example:
Actual flow rate: 50 mL/min
Approximate desired split ratio: 10,000:1
The HPLC Flow Rate of 40 mL/min can be used to obtain the 10,000:1 Split Factor to be entered into the MRA. In this case it would be 41. The actual split ratio at 50 mL/min would be:
50 mL/min ÷ 40 mL/min x 10,000 = 12,500
Split Ratio = 12,500:1.
<table>
<tr><th>HPLC Flow Rate (mL/min)</th><th colspan="7">Split Ratio</th></tr>
<tr><th></th><th>100:1</th><th>500:1</th><th>1,000:1</th><th>4,000:1</th><th>10,000:1</th><th>20,000:1</th><th>100,000:1</th></tr>
<tr><td>1</td><td>1</td><td>4</td><td>12</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>2</td><td>5</td><td>13</td><td>22</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>3</td><td>6</td><td>14</td><td>23</td><td>34</td><td></td><td></td></tr>
<tr><td>6</td><td></td><td>7</td><td>15</td><td>24</td><td>35</td><td>45</td><td></td></tr>
<tr><td>8</td><td></td><td>8</td><td>16</td><td>25</td><td>36</td><td>46</td><td></td></tr>
<tr><td>10</td><td></td><td>9</td><td>17</td><td>26</td><td>37</td><td>47</td><td></td></tr>
<tr><td>15</td><td></td><td>10</td><td>18</td><td>27</td><td>38</td><td>48</td><td></td></tr>
<tr><td>20</td><td></td><td>11</td><td>19</td><td>28</td><td>39</td><td>49</td><td></td></tr>
<tr><td>30</td><td></td><td></td><td>20</td><td>29</td><td>40</td><td>50</td><td>55</td></tr>
<tr><td>40</td><td></td><td></td><td>21</td><td>30</td><td>41</td><td>51</td><td>56</td></tr>
<tr><td>60</td><td></td><td></td><td></td><td>31</td><td>42</td><td>52</td><td>57</td></tr>
<tr><td>80</td><td></td><td></td><td></td><td>32</td><td>43</td><td>53</td><td>58</td></tr>
<tr><td>100</td><td></td><td></td><td></td><td>33</td><td>44</td><td>54</td><td>59</td></tr>
</table>
Recommended Split Factor Based on Flow Rate and How to Calculate a Split Ratio
Source: Data from MRA™ Operating Manual, Rheodyne, L.P., 2320949A(1), 8/01.
</td><td>1000:1</td></tr>
<tr><td>Log Variables</td><td>Select to record the program number the software used and store it in a spreadsheet file. The file is stored in a Variable Logs folder at C:\Users\OS User Name\My Documents\TRILUTION LC x.x\Export\Variable Logs.</td><td></td></tr>
</table>

MRA Splitter Start Splitter

This task starts the splitter. Be sure to first specify the settings using the MRA Splitter Set Split Ratio task.

For more information about the task properties, refer to:

MRA Splitter Start Splitter Properties

MRA Splitter Start Splitter Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Splitter	The splitter that the task will affect.	MRA Splitter

MRA Splitter Stop Splitter

This task stops the splitter.

For more information about the task properties, refer to:

MRA Splitter Stop Splitter Properties

MRA Splitter Stop Splitter Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Splitter	The splitter that the task will affect.	MRA Splitter

Multi Linear Gradient with Column Wash Out

To add a multiple linear gradient with column wash out mobile phase template to the control:

1. Ensure that you have mobile phase pumps in the configuration.
2. Drag the Multi Linear Gradient with Column Wash Out template and drop it in the workspace.
3. Specify the flow rate or a variable. A variable is created by typing # and then the variable name. The variable value is satisfied in the sample list. For more information, refer to Create a New Variable (Method Builder).

For more information, refer to How to Create Gradient or Isocratic Conditions on page 98.

Multi Linear Gradient with Step and Column Wash Out

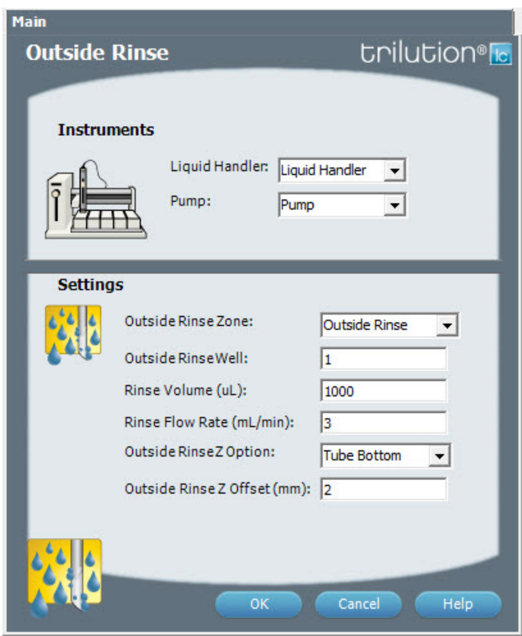
To add a multi linear gradient with step and column wash out mobile phase template to the control:

1. Ensure that you have mobile phase pumps in the configuration.
2. Drag the Multi Linear Gradient with Step and Column Wash Out template and drop it in the workspace.
3. Specify the flow rate or a variable. A variable is created by typing # and then the variable name. The variable value is satisfied in the sample list. For more information, refer to Create a New Variable (Method Builder).

For more information, refer to **How to Create Gradient or Isocratic Conditions on page 98**.

Outside Rinse

This task moves to the rinse station and then rinses the outside of the probe.



For more information about the task properties, refer to:

Outside Rinse Properties

Outside Rinse - Sequence of Steps

Outside Rinse - Sequence of Steps

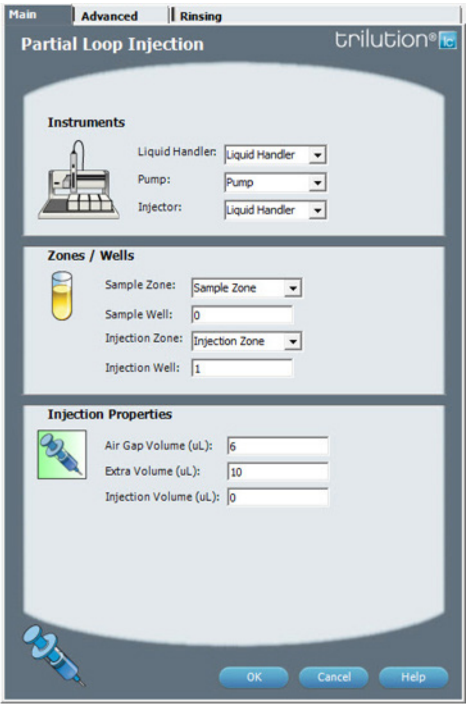
1. Move Z to Z Safe Height.
2. Move to Outside Rinse Well in Outside Rinse Zone.
3. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4. Home dilutor.
5. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
6. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
7. Repeat steps 5–6 until requested rinse volume is aspirated and dispensed.
8. Move Z to Z Safe Height.

Outside Rinse Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Outside Rinse Zone	The zone to which the Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

Partial Loop Injection Properties - Main

Partial Loop Injection Properties - Advanced

Partial Loop Injection Properties - Rinsing

Partial Loop Injection - Sequence of Steps

Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to reservoir.
3. Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Switch dilutor valve to probe.
5. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
6. Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min

PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 532

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume and Injection Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 533

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

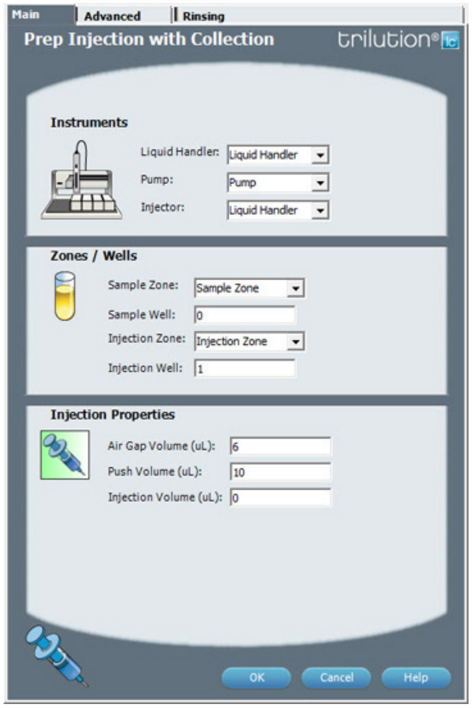
Partial Loop Injection Properties - Rinsing

For information on Rinse Positions, refer to Rinse Locations on page 621.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	500 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Prep Injection with Collection

This task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.



For more information about the properties on each tab, refer to:

Prep Injection with Collection Properties - Main
Prep Injection with Collection Properties - Advanced
Prep Injection with Collection Properties - Rinsing
Prep Injection with Collection - Sequence of Steps

Prep Injection with Collection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Switch fraction collection valve to COLLECT for 2 seconds.
5. Lower probe into well to Drain Z Option and Drain Z Offset.
6. Home dilutor.
7. Move Z to Z Safe Height.

LIST OF TASKS

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Switch dilutor valve to probe and aspirate Injection Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

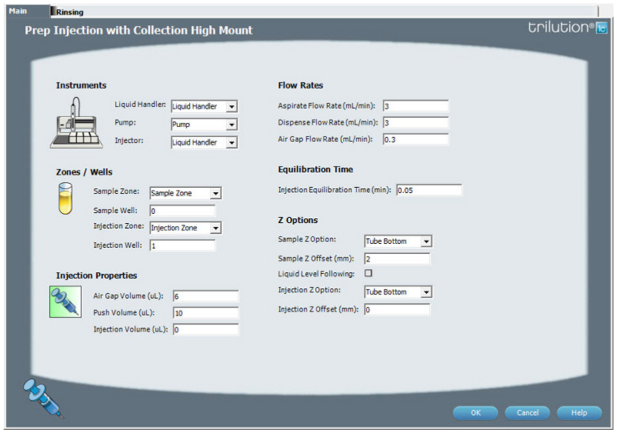
1. Home dilutor.
2. Switch dilutor valve to reservoir.
3. Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Switch dilutor valve to probe.
5. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
6. Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

Prep Injection with Collection High Mount

This task is used when doing injection and fraction collection on the same bed. It rinses the probe and then it performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop. It includes a rinse of the fraction collection valve for a user-defined duration after the injection.



For more information about the properties on each tab, refer to:

Prep Injection with Collection High Mount Properties - Main

Prep Injection with Collection High Mount Properties - Rinsing

Prep Injection with Collection High Mount - Sequence of Steps

Prep Injection with Collection High Mount - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse
6. Fraction Collection Valve Flush

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move Z to Z Safe Height.
4. Move to Inside Rinse Well in Inside Rinse Zone.
5. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
6. Switch solvent valve to Solvent Valve Position and dispense volume held by transfer tubing at Rinse Flow Rate.
7. Dispense Rinse Volume at Rinse Flow Rate.
8. Move Z to Z Safe Height.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.

3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Switch dilutor valve to probe and aspirate Injection Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to reservoir.
3. Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Switch dilutor valve to probe.
5. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
6. Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir.
5. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Switch dilutor valve to probe.
7. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
8. Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

FRACTION COLLECTION VALVE FLUSH

1. Move Z to Z Safe Height.
2. Move to Drain Well in Drain Zone.
3. Lower probe into well to Drain Z Option and Drain Z Offset.

4. Switch fraction collection valve to COLLECT for Fraction Collection Valve Rinse Time then switch the fraction collection valve to DIVERT.
5. Move Z to Z Safe Height.

Prep Injection with Collection High Mount Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Injection Volume and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

PREP INJECTION WITH COLLECTION HIGH MOUNT PROPERTIES - MAIN CONTINUED ON PAGE 540

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

Prep Injection with Collection High Mount Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top

PREP INJECTION WITH COLLECTION HIGH MOUNT PROPERTIES - RINSING CONTINUED ON PAGE 541

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	-7 mm
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Fraction Collection Valve Rinse Time	After the valve switches to COLLECT, the length of time the valve is rinsed before switching the valve back to DIVERT.	0.1 min
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	500 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

PREP INJECTION WITH COLLECTION HIGH MOUNT PROPERTIES - RINSING CONTINUED ON PAGE 542

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Prep Injection with Collection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min

PREP INJECTION WITH COLLECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 543

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

Prep Injection with Collection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE

Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Injector	The injector or injection module that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume is aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Injection Volume and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

Prep Injection with Collection Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

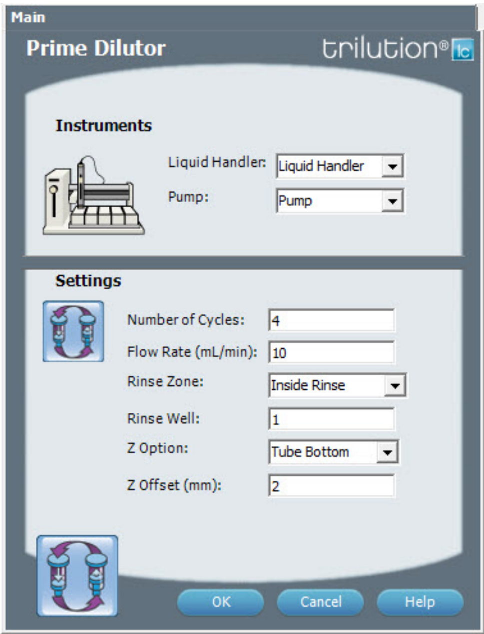
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7

PREP INJECTION WITH COLLECTION PROPERTIES - RINSING CONTINUED ON PAGE 545

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	500 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Prime Dilutor

This task primes the dilutor. It aspirates the syringe capacity from the reservoir and then dispenses to the specified well in the specified zone for the number of cycles.



For more information about the properties on each tab, refer to:

Prime Dilutor Properties

Prime Dilutor - Sequence of Steps

Prime Dilutor - Sequence of Steps

1. Move Z to Z Safe Height
2. Move probe to Rinse Well in Rinse Zone.
3. Lower probe to Z Option and Z Offset.
4. Home dilutor.
5. Aspirate full syringe capacity (from Reservoir) at Flow Rate.
6. Dispense full syringe capacity at Flow Rate.
7. Repeat steps 5–6 for Number of Cycles.
8. Move Z to Z Safe Height.

Prime Dilutor Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Number of Cycles	Enter the number of times to repeat aspirating and dispensing.	4

PRIME DILUTOR PROPERTIES CONTINUED ON PAGE 547

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Flow Rate	The speed at which the solvent moves into the syringe and then out of the probe.	10 mL/min
Rinse Zone	The zone to which the volume is dispensed.	Inside Rinse
Rinse Well	Enter the well number in the Rinse Zone.	1
Z Option	One of five defined reference points used when delivering liquids to the rinse station: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option for delivering liquids to the rinse station.	2 mm

Prime Make Up Pump

This task primes the make up pump at the specified flow rate. Ensure the purge valve is open before running the task. Run the **Stop Make Up Pump** task to stop priming.

For more information about the properties on each tab, refer to:

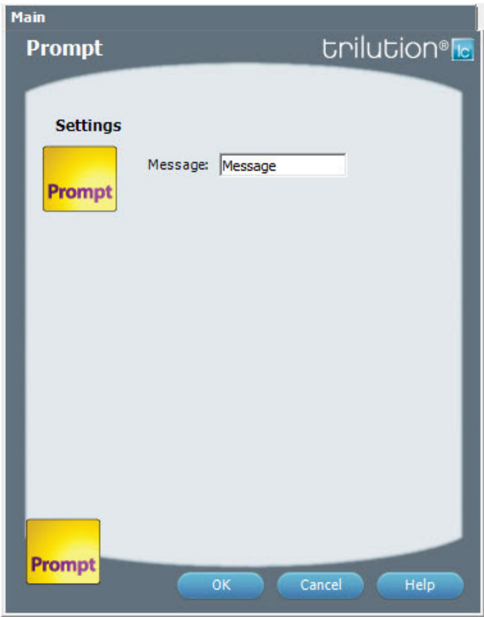
Prime Make Up Pump Properties

Prime Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Make Up Pump	The make up pump that the task will affect.	Make Up Pump
Flow Rate	The speed at which the solvent moves through the make up pump.	10 mL/min

Prompt

This task displays a prompt dialog with the selected message.



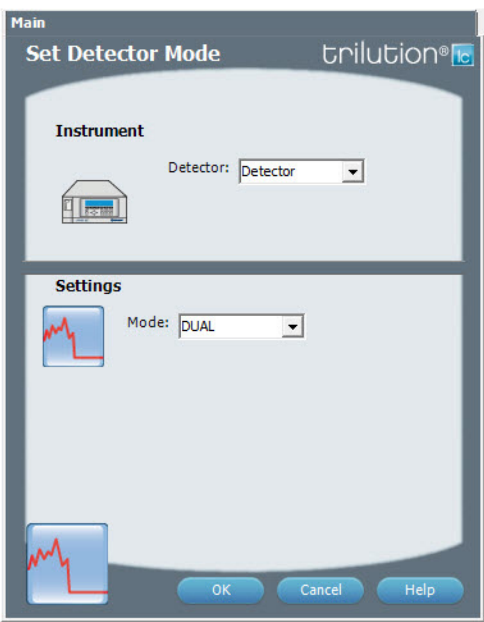
For more information about the task properties, refer to:
Prompt Properties

Prompt Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Message	Enter the text to display in the message box.	Message

Set Detector Mode

This task sets the detection mode on a 155 or 156 UV/VIS Detector.



For more information about the task properties, refer to:
Set Detector Mode Properties

Set Detector Mode Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL

Set Fraction Site

This task identifies where fraction collection will begin for an injected sample.

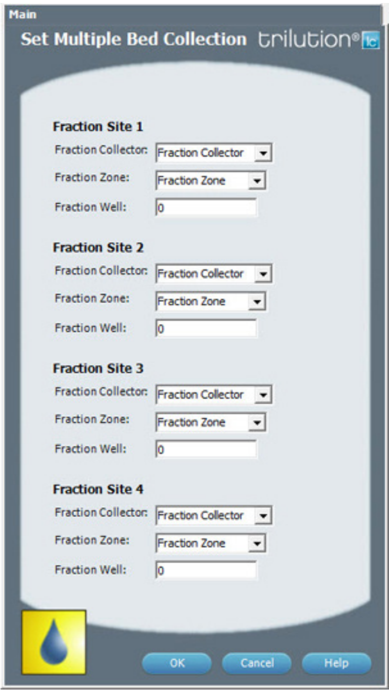
For more information about the task properties, refer to:
Set Fraction Site Properties

Set Fraction Site Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Collector	The fraction collector that the task will affect.	Fraction Collector
Fraction Zone	The zone in which fractions are collected.	Fraction Zone
Fraction Well	Enter the well number in the Fraction Zone in which collection will begin. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0

Set Multiple Bed Collection

This task is used to set the fraction site when multiple fraction collectors are being used.



For more information about the task properties, refer to:
Set Multiple Bed Collection Properties

Set Multiple Bed Collection Properties

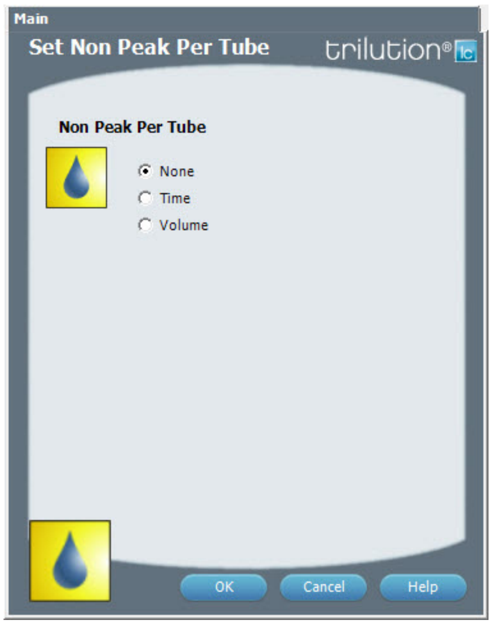
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Site 1 Fraction Collector	The first fraction collector that the task will affect.	Fraction Collector
Fraction Site 1 Fraction Zone	The zone in which fractions are collected on the first fraction collector.	Fraction Zone
Fraction Site 1 Fraction Well	Enter the well number in the **Fraction Zone** in which collection will begin on the first fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0
Fraction Site 2 Fraction Collector	The second fraction collector that the task will affect.	Fraction Collector
Fraction Site 2 Fraction Zone	The zone in which fractions are collected on the second fraction collector.	Fraction Zone
Fraction Site 2 Fraction Well	Enter the well number in the **Fraction Zone** in which collection will begin on the second fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0
Fraction Site 3 Fraction Collector	The third fraction collector that the task will affect.	Fraction Collector

SET MULTIPLE BED COLLECTION PROPERTIES CONTINUED ON PAGE 551

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Site 3 Fraction Zone	The zone in which fractions are collected on the third fraction collector.	Fraction Zone
Fraction Site 3 Fraction Well	Enter the well number in the Fraction Zone in which collection will begin on the third fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0
Fraction Site 4 Fraction Collector	The fourth fraction collector that the task will affect.	Fraction Collector
Fraction Site 4 Fraction Zone	The zone in which fractions are collected on the fourth fraction collector.	Fraction Zone
Fraction Site 4 Fraction Well	Enter the well number in the Fraction Zone in which collection will begin on the fourth fraction collector. The default of 0 is for continuous collection and the fractions are always collected in the next available tube.	0

Set Non Peak Per Tube

This task sets parameters for collecting non-peaks.



For more information about the task properties, refer to:

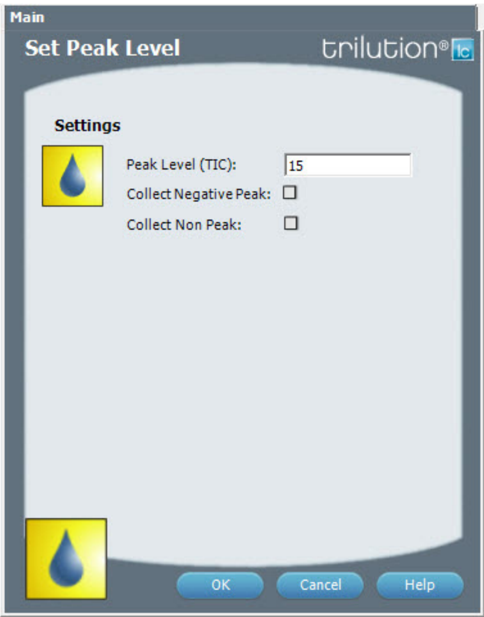
Set Non Peak Per Tube Properties

Set Non Peak Per Tube Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Time/Volume	Select from NONE, TIME, or VOLUME.	NONE
Time Time Per Tube	When TIME is selected, enter the time to dispense at each tube.	0 min
Volume Volume Per Tube	When VOLUME is selected, enter the maximum volume to be collected into each tube.	0 µL

Set Peak Level

This task sets the parameters for fraction collection by level.



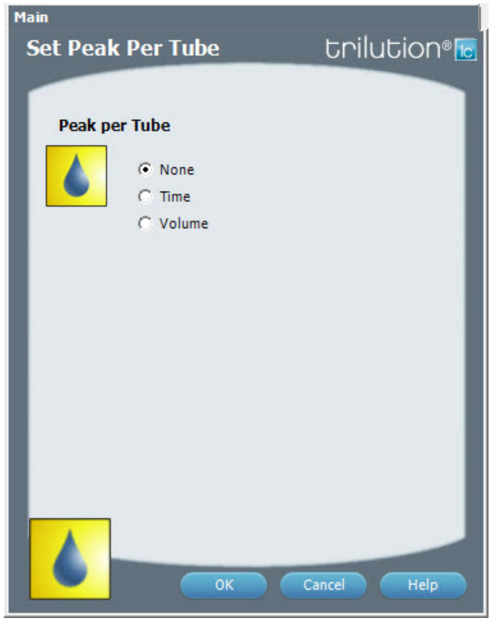
For more information about the task properties, refer to:
Set Peak Level Properties

Set Peak Level Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Peak Level	When collecting by LEVEL, the level above which all peaks are collected. This value is especially useful if the detector signal should go off-scale during collection.	15
Collect Negative Peak	Select to turn on or clear to turn off collection of negative peaks.	Cleared
Collect Non Peak	Select to collect non peaks.	Cleared

Set Peak Per Tube

This task sets parameters for collecting peaks.



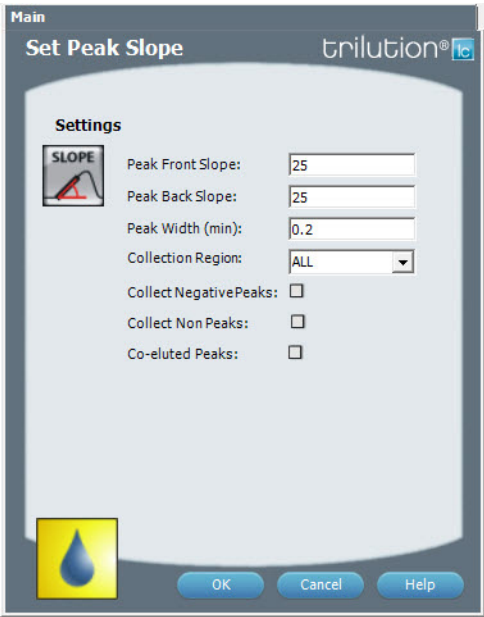
For more information about the task properties, refer to:
Set Peak Per Tube Properties

Set Peak Per Tube Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Time/Volume	Select from None, Time, or Volume	None
Time Time Per Tube	Enter the time to dispense at each tube.	0 min
Volume Volume Per Tube	Enter the maximum volume to be collected into each tube.	0 µL

Set Peak Slope

This task sets the parameters for fraction collection by slope.



For more information about the task properties, refer to:

Set Peak Slope Properties

Set Peak Slope Properties

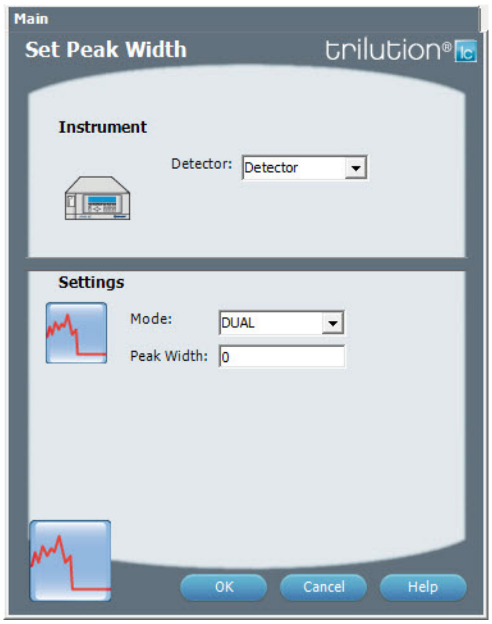
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Peak Front Slope	Consider the angle of the peak's ascending edge when setting the value for Peak Front Slope. A smaller Peak Front Slope value will collect smaller, sharper peaks. To reduce the number of small peaks collected, increase the Peak Front Slope value.	25
Peak Back Slope	Consider the angle of the peak's descending edge when setting the value for Peak Back Slope. If the peak has significant tailing, the Peak Back Slope value should be increased to reduce the amount of the tail that is collected or decreased to increase the amount of the tail that is collected.	25
Peak Width	The size of the data window that is used to calculate whether the slope condition has been met. If the trace has a lot of noise, set a higher value to reduce the number of smaller peaks that are collected or set a lower value to increase the number of smaller peaks that are collected.	0.2 min

SET PEAK SLOPE PROPERTIES CONTINUED ON PAGE 555

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Collection Region	Indicate whether the front of the slope to the apex (Front APEX), the apex to the tail (APEX Tail) or the entire peak (ALL) should be collected. To collect the entire peak, but advance to the next well at the apex, select APEX. Refer to Fraction Collection Techniques for examples of how the Collection Region option is used.	ALL
Collect Negative Peaks	Select to turn on or clear to turn off the collection of negative and positive peaks	Cleared
Co-eluted Peaks	Select to turn on or clear to turn off the collection of co-eluted peaks.	Cleared
Collect Non Peak	Indicates if all non peaks should be collected into tubes (Selected) or not (Cleared)	Cleared

Set Peak Width

This task sets the peak width and mode on the selected Detector.



For more information about the task properties, refer to:

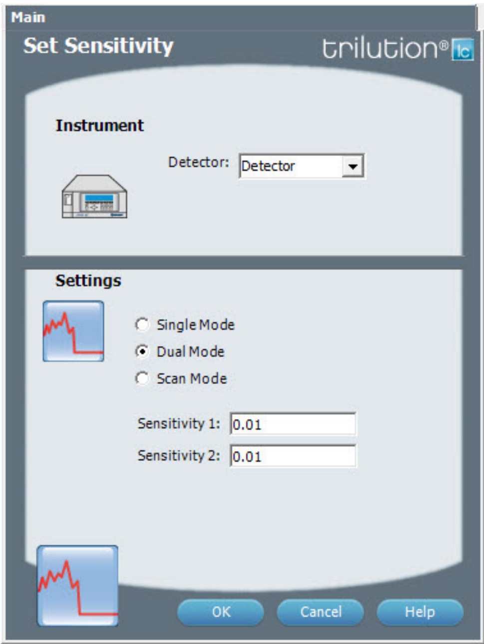
Set Peak Width Properties

Set Peak Width Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL
Peak Width	The detector must know the width of the narrowest peak in the run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds for SINGLE or SCAN mode or 4–99 for DUAL mode.	0 sec

Set Sensitivity

This task sets the sensitivities for monitoring a sample on separate output channels on the selected Detector.



For more information about the task properties, refer to:

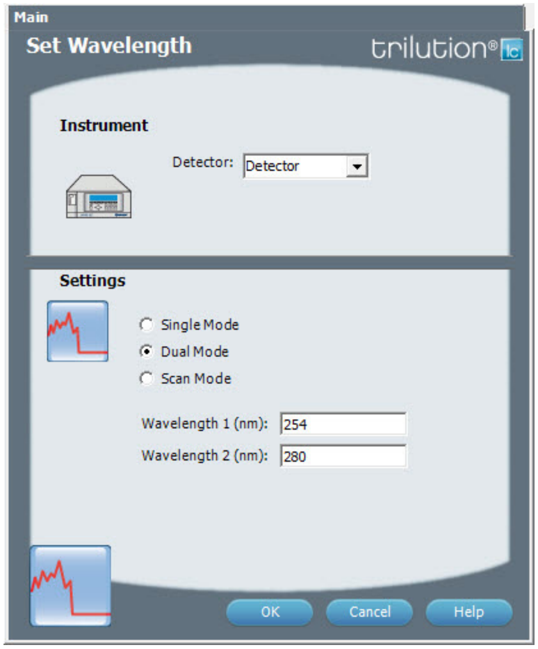
Set Sensitivity Properties

Set Sensitivity Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Mode	Select from Single Mode, Dual Mode, or Scan Mode.	Dual Mode
Single Mode Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01
Single Mode Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01
Dual Mode Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01
Dual Mode Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01
Scan Mode Sensitivity 1	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01
Scan Mode Sensitivity 2	One of two sensitivities for monitoring a sample on separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.01
Scan Mode Scan Sensitivity	The sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0.01

Set Wavelength

This task sets the wavelengths to be monitored based on the selected mode for the selected Detector.



For more information about the task properties, refer to:

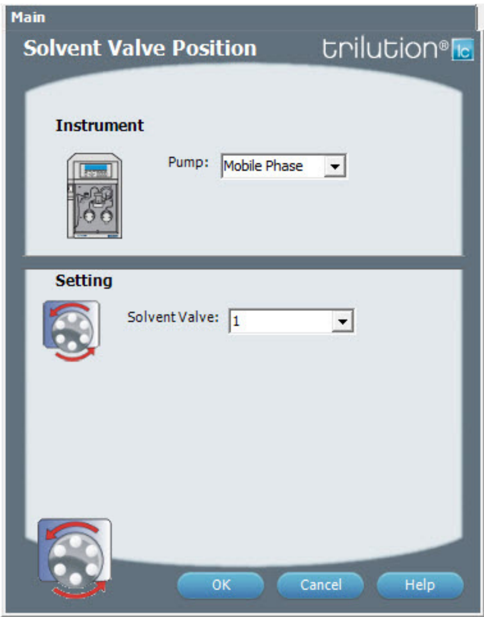
Set Wavelength Properties

Set Wavelength Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL
Single Mode Wavelength 1	The monitor wavelength. Valid range is 190–700 nm.	254 nm
Dual Mode Wavelength 1	The monitor wavelength. Valid range is 190–700 nm.	254 nm
Dual Mode Wavelength 2	The monitor wavelength for output channel 2. Valid range is 190–700 nm.	280 nm
Scan Mode Wavelength 1	The monitor wavelength. Valid range is 190–700 nm.	254 nm
Scan Mode Scan Start Wavelength	The first wavelength in the range that will be scanned. Valid range is 190–700 nm.	190 nm
Scan Mode Scan End Wavelength	The last wavelength in the range that will be scanned. Valid range is 190–700 nm.	700 nm

Solvent Valve Position

This task switches the solvent valve on the specified pump.



For more information about the task properties, refer to:
Solvent Valve Position Properties

Solvent Valve Position Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Pump	The pump that the task will affect.	Pump
Solvent Valve	The desired position of the solvent valve on the Pump. Valid range is 1–6.	1

Start Data Collection

This task tells TRILUTION LC to begin collecting data. This task has no properties to set.

Start Fraction Collection

This task tells TRILUTION LC to begin collecting fractions. This task has no properties to set.

Start Make Up Pump

This task starts flow from the specified make up pump.

For more information about the task properties, refer to:
Start Make Up Pump Properties

Start Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Make Up Pump	The make up pump that the task will affect.	Make Up Pump
Flow Rate	The speed at which liquid flows out of the make up pump.	0 mL/min

Start VERITY 1900 Make Up Pump

This task starts flow from the specified make up pump.

For more information about the task properties, refer to:
Start VERITY 1900 Make Up Pump Properties

Start VERITY 1900 Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Make Up Pump	The make up pump that the task will affect.	MS Detector
Flow Rate	The speed at which liquid flows out of the make up pump. The recommended make up pump flow rate for most applications is 0.3–2 mL/min.	0 mL/min

Start VERITY 1900 Splitter

This task starts the splitter. Be sure to first specify the settings using the VERITY 1900 Splitter Settings task.

For more information about the task properties, refer to:

Start VERITY 1900 Splitter Properties

Start VERITY 1900 Splitter Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Splitter	The splitter that the task will affect.	MS Detector

Start VERITY 1910 Make Up Pump

This task starts flow from the specified make up pump.

For more information about the task properties, refer to:
Start VERITY 1910 Make Up Pump Properties

Start VERITY 1910 Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Make Up Pump	The make up pump that the task will affect.	MS Detector
Flow Rate	The speed at which liquid flows out of the make up pump. The recommended make up pump flow rate for most applications is 0.3–2 mL/min.	0 mL/min

Start VERITY 1910 Splitter

This task starts the splitter. Be sure to first specify the settings using the VERITY 1910 Splitter Settings task.

For more information about the task properties, refer to:

Start VERITY 1910 Splitter Properties

Start VERITY 1910 Splitter Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Splitter	The splitter that the task will affect.	MS Detector

Stop Data Collection

This task tells TRILUTION LC to stop collecting data. This task has no properties to set.

Stop Fraction Collection

This task tells TRILUTION LC to stop collecting fractions. This task has no properties to set.

Stop Make Up Pump

This task stops flow from the specified make up pump.

For more information about the task properties, refer to:
Stop Make Up Pump Properties

Stop Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Make Up Pump	The make up pump that the task will affect.	Make Up Pump

Stop VERITY 1900 Make Up Pump

This task stops flow from the specified make up pump.

For more information about the task properties, refer to:
Stop VERITY 1900 Make Up Pump Properties

Stop VERITY 1900 Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE

Make Up Pump	The make up pump that the task will affect.	MS Detector

Stop VERITY 1900 Splitter

This task stops the splitter.

For more information about the task properties, refer to:

Stop VERITY 1900 Splitter Properties

Stop VERITY 1900 Splitter Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Splitter	The splitter that the task will affect.	MS Detector

Stop VERITY 1910 Make Up Pump

This task stops flow from the specified make up pump.

For more information about the task properties, refer to:

Stop VERITY 1910 Make Up Pump Properties

Stop VERITY 1910 Make Up Pump Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Make Up Pump	The make up pump that the task will affect.	MS Detector

Stop VERITY 1910 Splitter

This task stops the splitter.

For more information about the task properties, refer to:

Stop VERITY 1910 Splitter Properties

Stop VERITY 1910 Splitter Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Splitter	The splitter that the task will affect.	MS Detector

Switch VALVEMATE

This task changes the valve position on a VALVEMATE or VALVEMATE II.

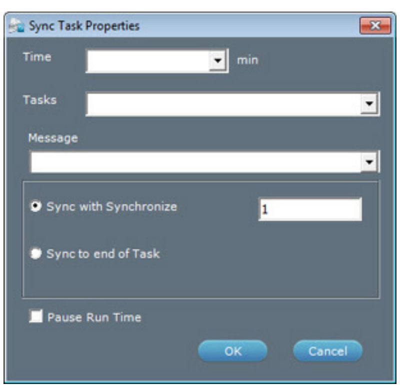
For more information about the properties on each tab, refer to:
Switch VALVEMATE Properties

Switch VALVEMATE Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
VALVEMATE	The VALVEMATE or VALVEMATE II that the task will affect.	Valve
Position	Desired position of the valve on the VALVEMATE or VALVEMATE II. Note: When using a 2-position valve on a VALVEMATE, choose 1 for position 0 or 2 for position 1.	1

Sync

This task coordinates steps in a task with a time in a method.



For more information about the properties on each tab, refer to:
Sync Properties
Sync - Sequence of Steps

Sync - Sequence of Steps

To set a synchronize to coordinate a step in a task with a time in a method:

1. Insert one or more Sync Wait Done commands in the task.

   NOTE Gilson-supplied injection tasks include one Sync Wait Done command.

2. Insert that task in the method.
3. Insert a Sync Task in the method.
   a. In the Time box, type the time at which the method will wait for the Synchronize in the task.
4. In the Tasks drop-down, select the task to which to synchronize.
5. Optionally, type a message to display while the software waits.
6. Select the option button to either Sync with synchronize or Sync to end of Task.

   If Sync with synchronize, then also type the number that corresponds to the Synchronize in the task. For example, if three Synchronize commands were inserted in the task, typing 1 would synchronize the method to the first Synchronize command in the task. Typing 3 would synchronize the method to the last Synchronize command in the task.

   If Sync to end of Task is selected, the method will wait until the task completes.

7. Optionally, select the Pause Run Time check box to pause the run time while the software waits and the pause time advances.

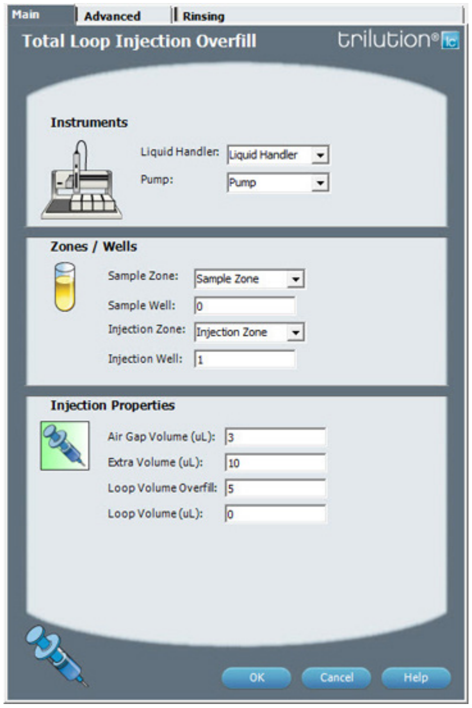
The Sync task displays as a blue vertical line in the control. During the run, the Pause Time displays underneath the Run Time while the software waits.

Sync Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Time	Type the time at which the method will begin to wait.	
Tasks	In the Tasks drop-down, select the task to which to synchronize.	
Message	In the Message drop-down, select the Message to display while waiting for the synchronize.	
Sync with Synchronize	Type the number that corresponds to the Synchronize in the task. For example, if three Synchronize commands were inserted in the task, typing 1 would synchronize the method to the first Synchronize command in the task. Typing 3 would synchronize the method to the last Synchronize command in the task.	1
Sync to end of Task	The method will wait until the task completes.	
Pause Run Time	Select to pause the run time while waiting.	

Total Loop Injection Overfill

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

Total Loop Injection Overfill Properties - Main

Total Loop Injection Overfill Properties - Advanced

Total Loop Injection Overfill Properties - Rinsing

Total Loop Injection Overfill - Sequence of Steps

Total Loop Injection Overfill - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset.
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.

INJECTION PORT RINSE

1. Switch injection valve to INJECT.
2. Home dilutor.
3. Aspirate Injection Rinse Volume or syringe capacity (from Reservoir) at Injection Rinse Flow Rate.
4. Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
5. Repeat steps 3–4 until requested rinse volume is aspirated and dispensed.
6. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity (from Reservoir) at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.

Total Loop Injection Overfill Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume and Loop Volume in the sample loop.	0.05 min

TOTAL LOOP INJECTION OVERFILL PROPERTIES - ADVANCED CONTINUED ON PAGE 573

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when performing the injection: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

Total Loop Injection Overfill Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Sample Zone	The zone from which the Extra Volume and Loop Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume and Loop Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Loop Volume.	10 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5
Loop Volume	The capacity of the installed sample loop.	0 µL

Total Loop Injection Overfill Properties - Rinsing

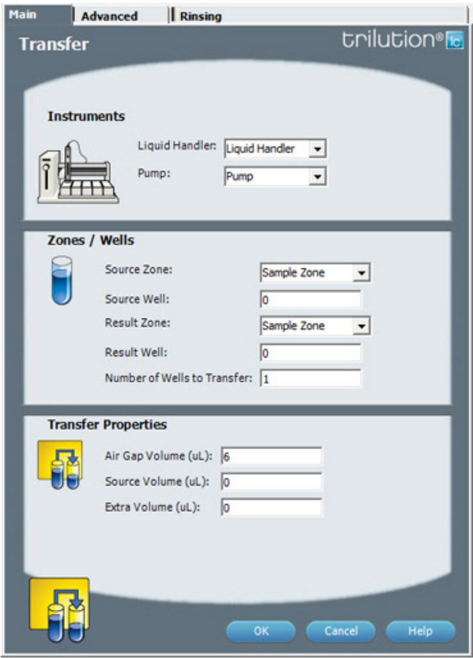
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7

TOTAL LOOP INJECTION OVERFILL PROPERTIES - RINSING CONTINUED ON PAGE 575

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	500 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Transfer

This task aspirates the specified volume of liquid (Source Volume) from the probe and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, refer to:

Transfer Properties - Main

Transfer Properties - Advanced

Transfer Properties - Rinsing

Transfer - Sequence of Steps

Transfer - Sequence of Steps

The following is an overview for the sequence of steps.

1. Aspirate
2. Dispense
3. Inside Rinse
4. Outside Rinse

ASPIRATE

1. Move Z to Z Safe Height.
2. Aspirate Air Gap Volume at Air Gap Flow Rate.
3. Move to Source Well in Source Zone.
4. Lower probe to Aspirate Z Option and Aspirate Z Offset.
5. Aspirate Source Volume + Extra Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

DISPENSE

1. Move to Result Well in Result Zone.
2. Lower probe to Dispense Z Option and Dispense Z Offset.
3. Dispense Source Volume at Dispense Flow Rate.
4. Move Z to Z Safe Height.

INSIDE RINSE

1. Move to Inside Rinse Well in Inside Rinse Zone.
2. Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
5. Dispense Inside Rinse Volume or syringe capacity (from Reservoir) at Inside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.
8. Repeat Number of Wells to Transfer.

Transfer Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which the Source Volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Aspirate Z Option	One of five defined reference points used when drawing liquids from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Aspirate Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquids from the bed.	2 mm

TRANSFER PROPERTIES - ADVANCED CONTINUED ON PAGE 578

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate LLF	When selected the probe will follow the liquid down as it is aspirated from the Source Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid down as it is aspirated from the Source Zone.	Cleared
Dispense Z Option	One of five defined reference points used when delivering liquids to the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Dispense Z Offset value to move up from the bottom. Top Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. Tube Top Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquids to the bed.	2 mm
Dispense LLF	When selected the probe will follow the liquid up as it is delivered to the Result Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared the probe will not follow the liquid up as it is delivered to the Result Zone.	Cleared

Transfer Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Source Zone	The zone from which the Source Volume and Extra Volume are drawn.	Sample Zone
Source Well	Enter the well number in the Source Zone.	0
Result Zone	The zone to which the Source Volume is delivered.	Sample Zone
Result Well	Enter the well number in the Result Zone.	0
Number of Wells to Transfer	The number of Source Wells to transfer to Result Wells.	1
Air Gap Volume	The quantity of the air gap aspirated before the Source Volume.	6 µL
Source Volume	The quantity of sample	0 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 µL

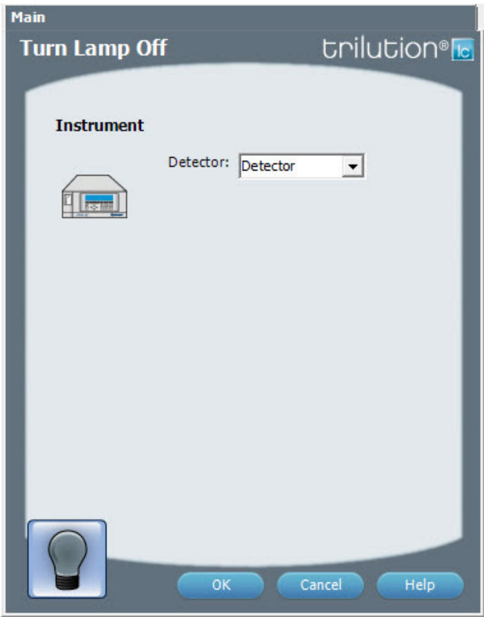
Transfer Properties - Rinsing

For information on Rinse Positions, refer to **Rinse Locations on page 621**.

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points used when performing the inside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Turn Lamp Off

This task turns off power to the lamps while maintaining power to the Detector.



For more information about the properties on each tab, refer to:

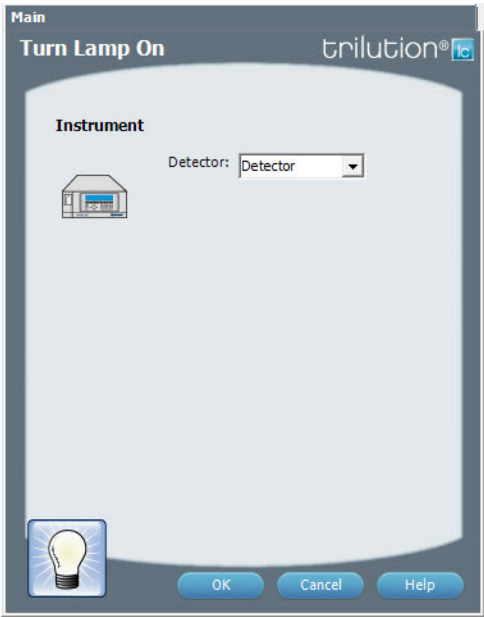
Turn Lamp Off Properties

Turn Lamp Off Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector

Turn Lamp On

This task turns the UV and visible lamps on for the specified Detector.



For more information about the properties on each tab, refer to:

Turn Lamp On Properties

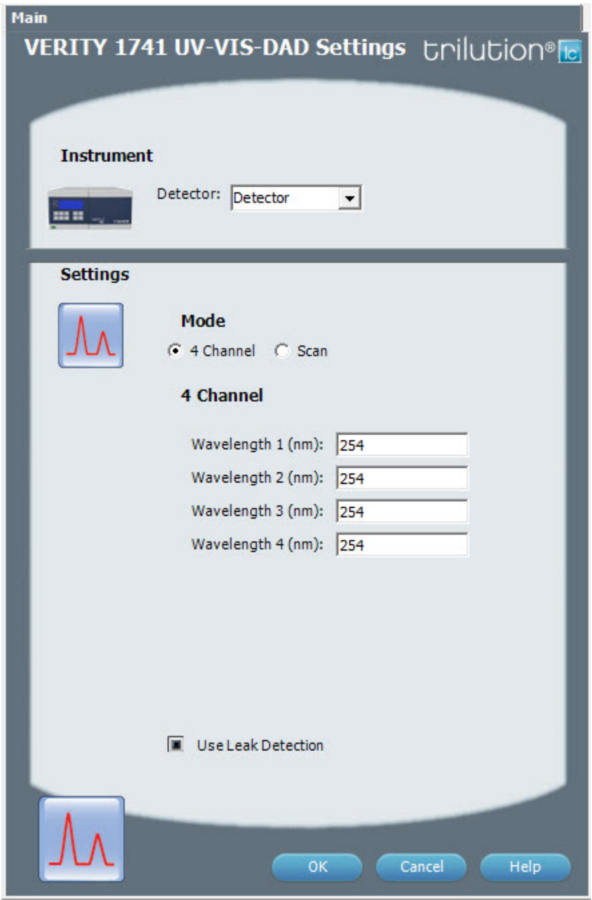
Turn Lamp On Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector

VERITY 1741 UV-VIS-DAD SETTINGS

This task sets the data collection parameters for each selected channel for the VERITY 1741 Detector.

NOTE	**The maximum number of channels per configuration that can be used is eight (8).** **To use the settings in the task, the corresponding channel must be marked for use on the configuration property page for the detector.**



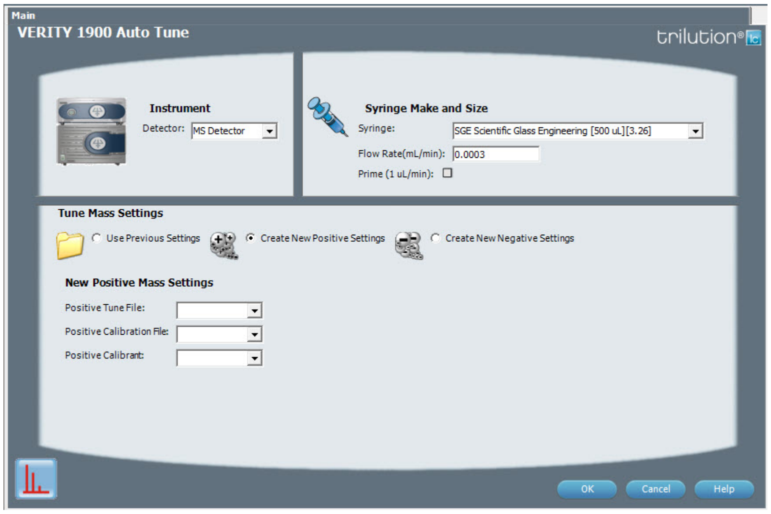
For more information about the properties on each tab, refer to:
VERITY 1741 UV-VIS-DAD Settings Properties

VERITY 1741 UV-VIS-DAD Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	Detector
4 Channel Mode	Select to set the detector to UV-VIS mode. Up to four channels of data can be collected at the same or different wavelengths.	
Scan Mode	Select to set the detector to DAD (scan) mode. Up to eight channels of data can be collected at the same or different wavelengths. The channel data is extracted from the scan data. Spectral data is collected when using this mode.	
Wavelength x (nm)	Set the data collection parameter (wavelength) for each channel to be used (1–4 or 1–8, depending on mode). Valid range is 200–800 nm.	254 nm
Use Leak Detection	The VERITY 1741 Detector includes a leak sensor. When Use Leak Detection is selected (as it is by default), and a leak is detected, the detector will beep and trigger a Leak Detection Error followed by an optional user-defined response.	Selected

VERITY 1900 Auto Tune

This task calibrates the VERITY 1900 MS Detector across a specified mass range. Run this task using manual control (NOT as part of a method).



For information about the task properties, refer to: VERITY 1900 Auto Tune Properties

VERITY 1900 Auto Tune Properties

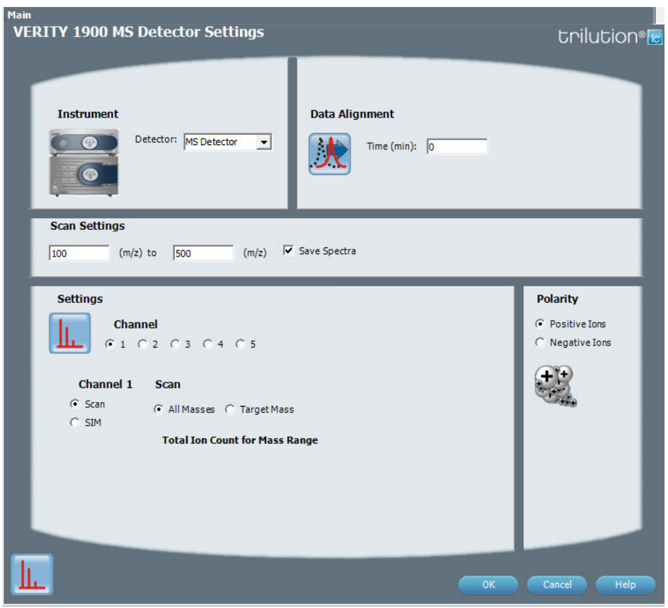
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Syringe	The syringe installed on the calibration syringe pump. The default selection is the syringe provided in the calibration kit.	SGE Scientific Glass Engineering [500 uL] [3.26]
Flow Rate	Enter the Flow Rate. This is the syringe pump flow rate during the auto tune. The recommended flow rate is 0.0003 mL/min (equates to 0.3 µL/min).	
Prime	Optionally, select to Prime. This will prime the syringe pump at 1 uL/min (0.001 mL/min) until microspray is established.	Cleared
Tune Mass Settings	Select from Use Previous Settings (to use settings from the last positive and/or negative auto tune), Create New Positive Settings (to tune the MS Detector for positive ionization), or Create New Negative Settings (to tune the MS Detector for negative ionization). It may be necessary (and is necessary for the first auto tune) to run the auto tune twice: once for positive settings and once for negative settings.	Use Previous Settings
Use Previous Settings		
Tune Mix Polarity	When Use Previous Settings is selected, select from Positive or Negative.	Positive
Create New Positive Settings		
Positive Tune File	In the Positive Tune File field, select calibration (+).	
Positive Calibration File	In the Positive Calibration File field, select a previous Positive Calibration File. Note: To limit/filter this list, go to Administrative Tools - Settings and set the number of files to list.	
Positive Calibrant	In the Positive Calibrant field, select Sodium Formate +.	
Create New Negative Settings		
Negative Tune File	In the Negative Tune File field, select calibration (-).	

VERITY 1900 AUTO TUNE PROPERTIES CONTINUED ON PAGE 584

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Negative Calibration File	In the Negative Calibration File field, select a previous Negative Calibration File. Note: To limit/filter this list, go to Administrative Tools - Settings and set the number of files to list.	
Negative Calibrant	In the Negative Calibrant field, select Sodium Formate -.	

VERITY 1900 MS Detector Settings

This task sets the data collection parameters for each selected channel for the VERITY 1900 MS Detector.



For information about the task properties, refer to: VERITY 1900 MS Detector Settings Properties

VERITY 1900 MS Detector Settings Properties

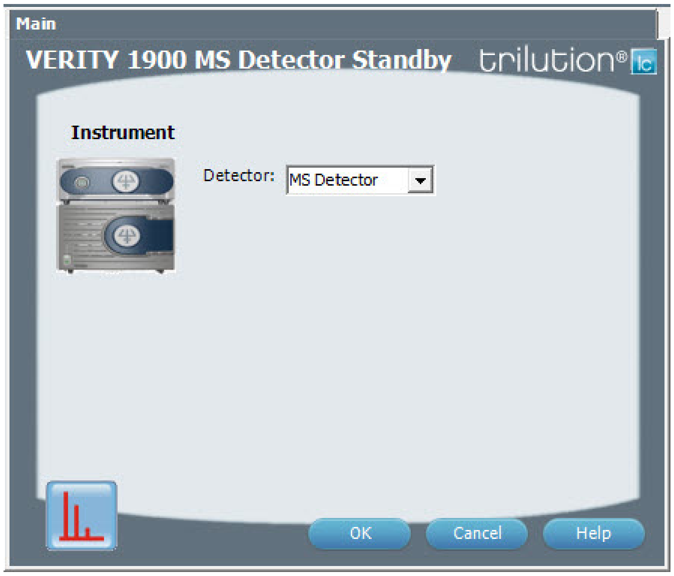
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Data Alignment Time	Shifts the retention time of the mass spec peak to align with the UV peak. Only positive values are allowed, which shifts the MS data trace to the right. If the primary channel is an MS channel, this value must be set to 0 (which is the default). Additionally, the value for Fraction Collection Delay Volume (on the liquid handler configuration property page) will need to be modified.	0 min
Scan Settings		
Range	Enter the beginning and ending masses in the full scan range. (Range limits 50–800 m/z.)	100–500 m/z
Save Spectra	Select to save the spectral data from a scan at the end of the run. If choosing not to save spectra, the fraction spectra will still be saved.	Selected
Settings		
Channel	Select channel number for which data collection parameters will be set. Repeat for each channel to be used. (1–5)	1
Scan	Select to monitor a specified scan range.	Selected

VERITY 1900 MS DETECTOR SETTINGS PROPERTIES CONTINUED ON PAGE 585

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Scan All Masses	Select to display the data trace as the total ion count for the masses within the specified scan range. Do not associate an analysis with the data channel used for the scan of all masses. An analysis can be browsed in post-run and data re-analyzed.	Selected
Scan Target Mass	Select to display the data trace as the specified mass with one to three adducts (extracted ion or extracted ions). If Save Spectra was selected (it is by default), the data for the full scan range will be saved and can be viewed as spectral data.	Cleared
Scan Target Mass Target	Enter the mass.	100 amu
Scan Target Mass Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
SIM	Select to monitor a target mass with adducts (Selected Ion Monitoring).	Cleared
SIM Target	Enter the mass.	100 amu
SIM Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
Polarity		
Positive Ions	Select to form positive ions. Adduct values are added to the target when forming positive ions.	Selected
Negative Ions	Select to form negative ions. Adduct values are subtracted from the target when forming negative ions.	Cleared

VERITY 1900 MS Detector Standby

This task puts the VERITY 1900 MS Detector in standby.



For information about the task properties, refer to:

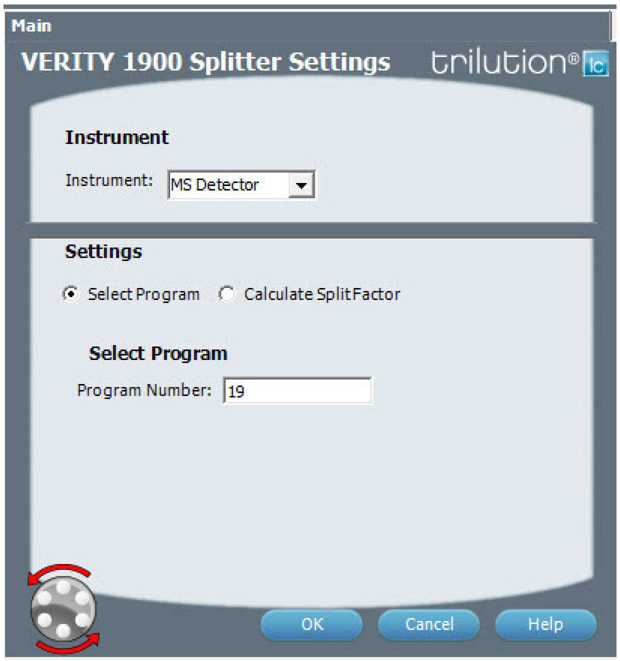
VERITY 1900 MS Detector Standby Properties

VERITY 1900 MS Detector Standby Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector

VERITY 1900 Splitter Settings

This task readies the splitter for operation.



For information about the task properties, refer to: VERITY 1900 Splitter Settings Properties

VERITY 1900 Splitter Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument	The detector that the task will affect.	MS Detector
Select Program - matches the local keypad control on the splitter by allowing the user to set the split factor.		
Program Number	The program number to use.	19
Calculate Split Factor - allows for entering the desired split ratio, and then the software automatically sets the splitter to the closest value.		

VERITY 1900 SPLITTER SETTINGS PROPERTIES CONTINUED ON PAGE 587

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Mobile Phase Flow Rate		20 mL/min
Desired Split Ratio		1000:1

Calculating a Split Ratio

Split Ratios are calculated using the following equation:

Actual Flow Rate ÷ HPLC Flow Rate from Table I x Corresponding Split Ratio from Table I

Example:

Actual flow rate: 50 mL/min
Approximate desired split ratio: 10,000:1

The HPLC Flow Rate of 40 mL/min can be used to obtain the 10,000:1 Split Factor to be entered into the MRA. In this case it would be 41. The actual split ratio at 50 mL/min would be:

50 mL/min ÷ 40 mL/min x 10,000 = 12,500

Split Ratio = 12,500:1.

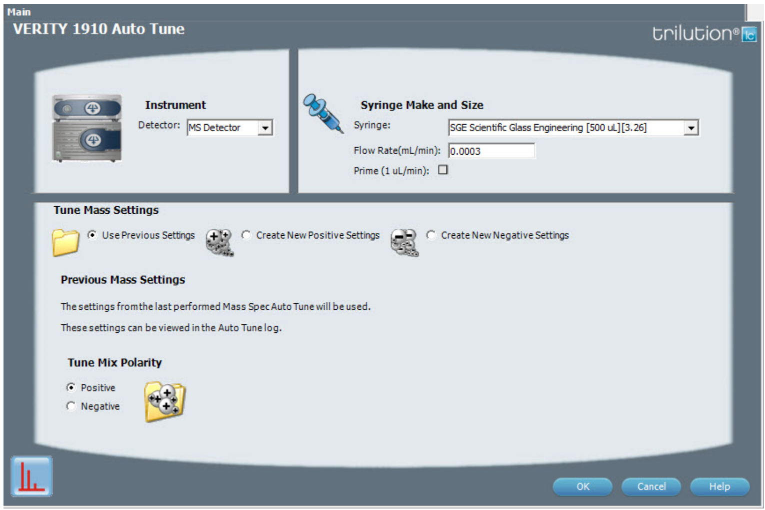
	Split Ratio						
HPLC Flow Rate (mL/min)	100:1	500:1	1,000:1	4,000:1	10,000:1	20,000:1	100,000:1
1	1	4	12				
2	2	5	13	22			
4	3	6	14	23	34		
6		7	15	24	35	45	
8		8	16	25	36	46	
10		9	17	26	37	47	
15		10	18	27	38	48	
20		11	19	28	39	49	
30			20	29	40	50	55
40			21	30	41	51	56
60				31	42	52	57
80				32	43	53	58
100				33	44	54	59

Recommended Split Factor Based on Flow Rate and How to Calculate a Split Ratio
Source: **Data from MRA™ Operating Manual, Rheodyne, L.P., 2320949A(1), 8/01.**

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Log Variables	Select to record the program number the software used and store it in a spreadsheet file. The file is stored in a Variable Logs folder at C:\Users\OS User Name\My Documents\TRILUTION LC x.x\Export\Variable Logs.	

VERITY 1910 Auto Tune

This task calibrates the VERITY 1910 MS Detector across a specified mass range. Run this task using manual control (NOT as part of a method).



For information about the task properties, refer to:

VERITY 1910 Auto Tune Properties

VERITY 1910 Auto Tune Properties

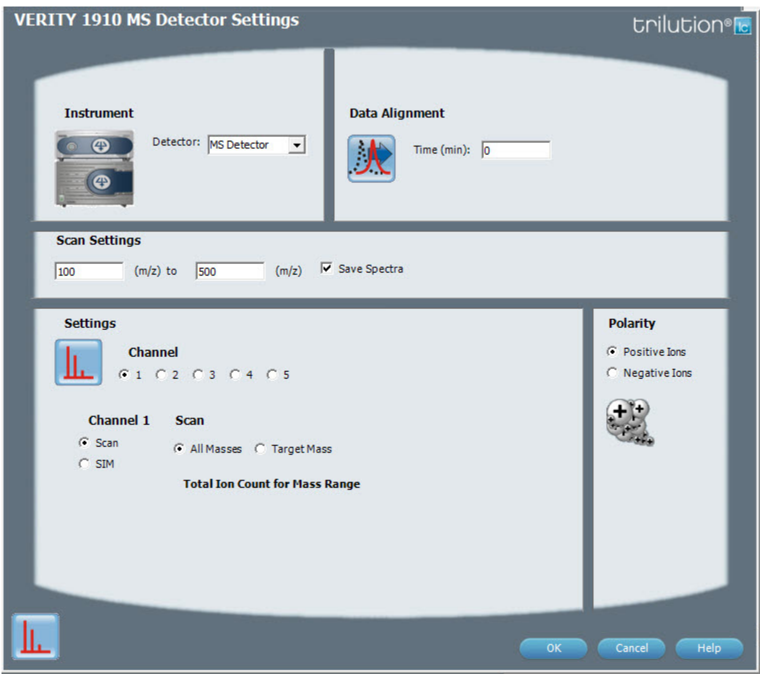
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Syringe	The syringe installed on the calibration syringe pump. The default selection is the syringe provided in the calibration kit.	SGE Scientific Glass Engineering [500 uL] [3.26]
Flow Rate	Enter the flow rate. This is the syringe pump flow rate during the auto tune. The recommended flow rate is 0.0003 mL/min (equates to 0.3 µL/min).	
Prime	Optionally, select to Prime. This will prime the syringe pump at 1 uL/min (0.001 mL/min) until microspray is established.	Cleared
Tune Mass Settings	Select from Use Previous Settings (to use settings from the last positive and/or negative auto tune), Create New Positive Settings (to tune the MS Detector for positive ionization), or Create New Negative Settings (to tune the MS Detector for negative ionization). It may be necessary (and is necessary for the first auto tune) to run the auto tune twice: once for positive settings and once for negative settings.	Use Previous Settings
Use Previous Settings		
Tune Mix Polarity	When Use Previous Settings is selected, select from Positive or Negative.	Positive
Create New Positive Settings		
Positive Tune File	In the Positive Tune File field, select calibration (+).	
Positive Calibration File	In the Positive Calibration File field, select a previous Positive Calibration File. Note: To limit/filter this list, go to Administrative Tools - Settings and set the number of files to list.	
Positive Calibrant	In the Positive Calibrant field, select SodiumTFA + .	
Create New Negative Settings		
Negative Tune File	In the Negative Tune File field, select calibration (-).	

VERITY 1910 AUTO TUNE PROPERTIES CONTINUED ON PAGE 589

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Negative Calibration File	In the Negative Calibration File field, select a previous Negative Calibration File. Note: To limit/filter this list, go to Administrative Tools - Settings and set the number of files to list.	
Negative Calibrant	In the Negative Calibrant field, select SodiumTFA - .	

VERITY 1910 MS Detector Settings

This task sets the data collection parameters for each selected channel for the VERITY 1910 MS Detector and will put the VERITY 1910 MS Detector into Operate mode, if it is not already. When switching to operate mode, a 15 second nitrogen flush is automatically performed.



For information about the task properties, refer to:

VERITY 1910 MS Detector Settings Properties

VERITY 1910 MS Detector Settings Properties

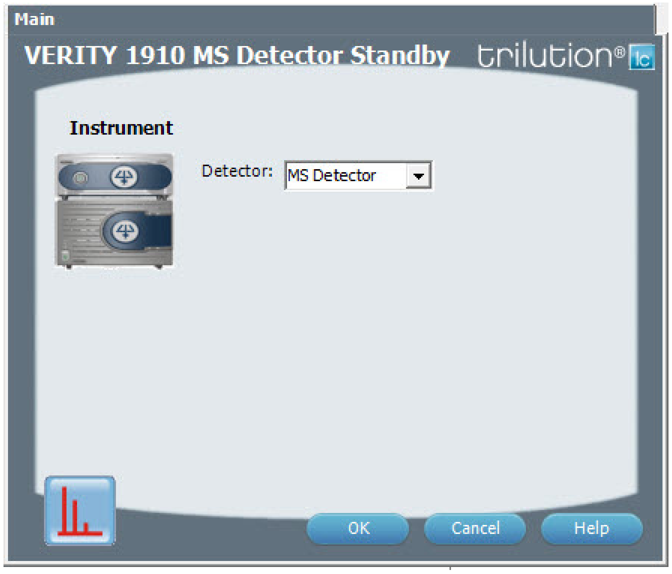
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Data Alignment Time	Shifts the retention time of the mass spec peak to align with the UV peak. Only positive values are allowed, which shifts the MS data trace to the right. If the primary channel is an MS channel, this value must be set to 0 (which is the default). Additionally, the value for Fraction Collection Delay Volume (on the liquid handler configuration property page) will need to be modified.	0 min
Scan Settings		
Range	Enter the beginning and ending masses in the full scan range. (Range limits 1400 m/z.)	100–500 m/z
Save Spectra	Select to save the spectral data from a scan at the end of the run. If choosing not to save spectra, the fraction spectra will still be saved.	Selected
Settings		

VERITY 1910 MS DETECTOR SETTINGS PROPERTIES

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Channel	Select channel number for which data collection parameters will be set. Repeat for each channel to be used. (1–5)	1
Scan	Select to monitor a specified scan range.	Selected
Scan All Masses	Select to display the data trace as the total ion count for the masses within the specified scan range. Do not associate an analysis with the data channel used for the scan of all masses. An analysis can be browsed in post-run and data re-analyzed.	Selected
Scan Target Mass	Select to display the data trace as the specified mass with one to three adducts (extracted ion or extracted ions). If Save Spectra was selected (it is by default), the data for the full scan range will be saved and can be viewed as spectral data.	Cleared
Scan Target Mass Target	Enter the mass.	100 amu
Scan Target Mass Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
SIM	Select to monitor a target mass with adducts (Selected Ion Monitoring).	Cleared
SIM Target	Enter the mass.	100 amu
SIM Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
Polarity		
Positive Ions	Select to form positive ions. Adduct values are added to the target when forming positive ions.	Selected
Negative Ions	Select to form negative ions. Adduct values are subtracted from the target when forming negative ions.	Cleared

VERITY 1910 MS Detector Standby

This task puts the VERITY 1910 MS Detector in standby.



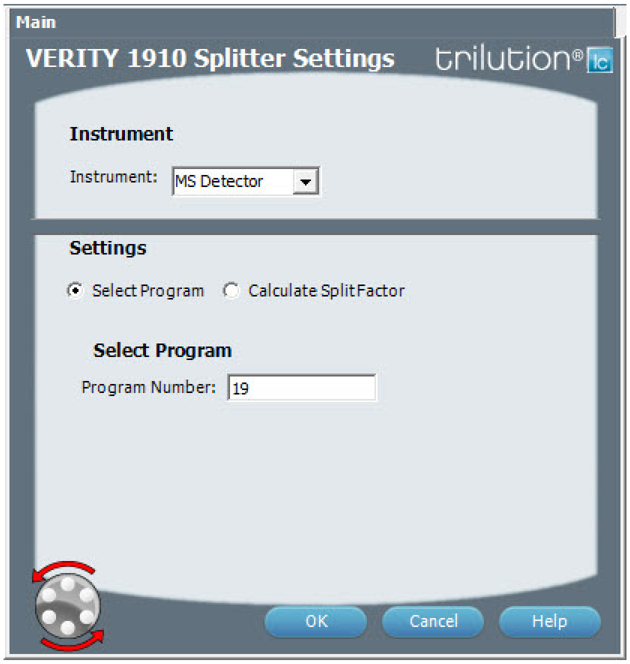
For information about the task properties, refer to: VERITY 1910 MS Detector Standby Properties

VERITY 1910 MS Detector Standby Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector

VERITY 1910 Splitter Settings

This task readies the splitter for operation.



For information about the task properties, refer to: VERITY 1910 Splitter Settings Properties

VERITY 1910 Splitter Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument	The detector that the task will affect.	MS Detector
Select Program - matches the local keypad control on the splitter by allowing the user to set the split factor.		
Program Number	The program number to use.	19
Calculate Split Factor - allows for entering the desired split ratio, and then the software automatically sets the splitter to the closest value.		
Mobile Phase Flow Rate	When setting the split ratio, care should be taken to ensure resultant flow rates are compatible with the VERITY® 1910 MS Detector (refer to the *VERITY® 1910 MS Detector User's Guide*). Enter values in the fields based on the following information:	20 mL/min
Desired Split Ratio	(see Calculating a Split Ratio and Split Ratio table below)	1000:1
Log Variables	Select to record the program number the software used and store it in a spreadsheet file. The file is stored in a Variable Logs folder at C:\Users\OS User Name\My Documents\TRILUTION LC x.x\Export\Variable Logs.	

Calculating a Split Ratio

Split Ratios are calculated using the following equation:

Actual Flow Rate ÷ HPLC Flow Rate from Table I x Corresponding Split Ratio from Table I

Example:

Actual flow rate: 50 mL/min
Approximate desired split ratio: 10,000:1

The HPLC Flow Rate of 40 mL/min can be used to obtain the 10,000:1 Split Factor to be entered into the MRA. In this case it would be 41. The actual split ratio at 50 mL/min would be:

50 mL/min ÷ 40 mL/min x 10,000 = 12,500

Split Ratio = 12,500:1.

HPLC Flow Rate (mL/min)	Split Ratio						
	100:1	500:1	1,000:1	4,000:1	10,000:1	20,000:1	100,000:1
1	1	4	12				
2	2	5	13	22			
4	3	6	14	23	34		
6		7	15	24	35	45	
8		8	16	25	36	46	
10		9	17	26	37	47	
15		10	18	27	38	48	
20		11	19	28	39	49	
30			20	29	40	50	55
40			21	30	41	51	56
60				31	42	52	57
80				32	43	53	58
100				33	44	54	59

Recommended Split Factor Based on Flow Rate and How to Calculate a Split Ratio
Source: **Data from MRA™ Operating Manual, Rheodyne, L.P., 2320949A(1), 8/01.**

VERITY 1920 Auto Tune

This task calibrates the VERITY 1920 MS across a specified mass range. Run this task using manual control (NOT as part of a method).

For information about the task properties, refer to: VERITY 1920 Auto Tune Properties

VERITY 1920 Auto Tune Properties

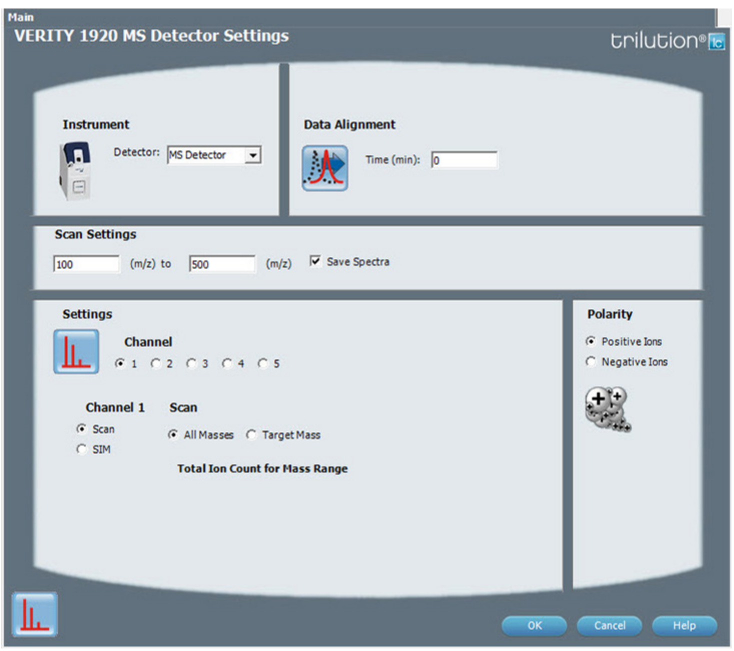
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Tune Mass Settings	Select from **Use Previous Settings** (to use settings from the last positive and/or negative auto tune), **Create New Positive Settings** (to tune the MS Detector for positive ionization), or **Create New Negative Settings** (to tune the MS Detector for negative ionization). It may be necessary to run the auto tune twice: once for positive settings and once for negative settings.	Use Previous Settings
Use Previous Settings		
Tune Mix Polarity	When **Use Previous Settings** is selected, select from **Positive** or **Negative**.	Positive
Create New Positive Settings		
New Positive Mass Settings	Select the installed ion source: ESI or APCI.	
Positive Tune File	Select the Positive Tune File. This file is on the VERITY 1920 Mass Spectrometer Documentation USB provided with the VERITY 1920 MS and must be imported in the **Manual Control** Window - **Auto Tune** tab - **Import Files** button.	
Positive Source File	Select the Positive Source File. This file is on the VERITY 1920 Mass Spectrometer Documentation USB provided with the VERITY 1920 MS and must be imported in the **Manual Control** Window - **Auto Tune** tab - **Import Files** button.	
Create New Negative Settings		
New Negative Mass Settings	Select the installed ion source: ESI or APCI.	

VERITY 1920 AUTO TUNE PROPERTIES CONTINUED ON PAGE 594

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Negative Tune File	Select the Negative Tune File. This file is on the VERITY 1920 Mass Spectrometer Documentation USB provided with the VERITY 1920 MS and must be imported in the **Manual Control** Window - **Auto Tune** tab - **Import Files** button.	
Negative Source File	Select the Negative Source File. This file is on the VERITY 1920 Mass Spectrometer Documentation USB provided with the VERITY 1920 MS and must be imported in the **Manual Control** Window - **Auto Tune** tab - **Import Files** button.	
Create New Positive Settings or Create New Negative Settings		
Mass	Enter the mass values for the peaks that should be present in the tune mix. The default masses are those that should be present in the recommended tune mix.	m/z
Use	Select for each mass to use for the auto tune.	

VERITY 1920 MS Detector Settings

This task sets the data collection parameters for each selected channel for the VERITY 1920 MS Detector.



For information about the task properties, refer to:
VERITY 1920 MS Detector Settings Properties

VERITY 1920 MS Detector Settings Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Data Alignment Time	Shifts the retention time of the mass spec peak to align with the UV peak. Only positive values are allowed, which shifts the MS data trace to the right. If the primary channel is an MS channel, this value must be set to 0 (which is the default). Additionally, the value for Fraction Collection Delay Volume (on the liquid handler configuration property page) will need to be modified.	0 min
Scan Settings		
Range	Enter the beginning and ending masses in the full scan range. (Range limits 10–2000 m/z.)	100–500 m/z

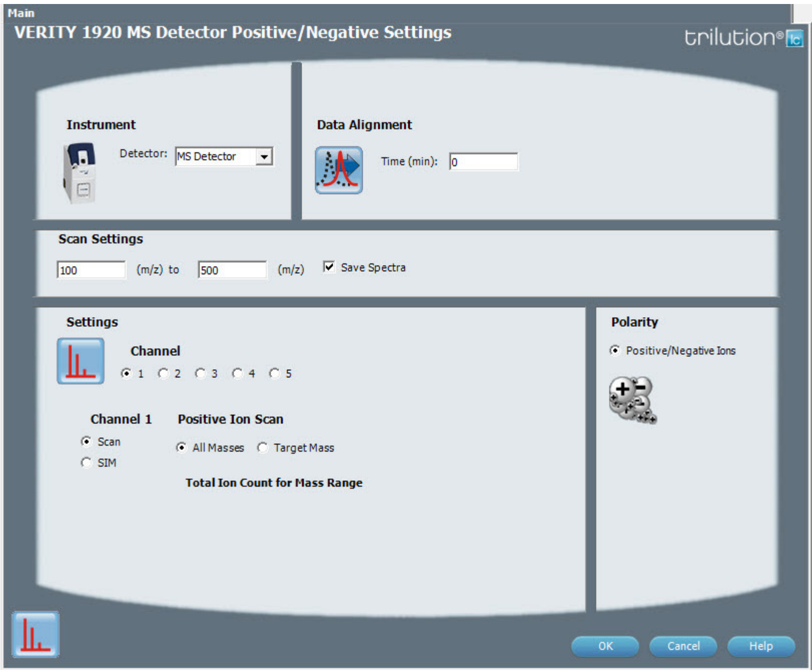
VERITY 1920 MS DETECTOR SETTINGS PROPERTIES CONTINUED ON PAGE 595

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Save Spectra	Select to save the spectral data from a scan at the end of the run. If choosing not to save spectra, the fraction spectra will still be saved.	Selected
Settings		
Channel	Select channel number for which data collection parameters will be set. Repeat for each channel to be used. (1–5)	1
Scan	Select to monitor a specified scan range.	Selected
Scan All Masses	Select to display the data trace as the total ion count for the masses within the specified scan range. Do not associate an analysis with the data channel used for the scan of all masses. An analysis can be browsed in post-run and data re-analyzed.	Selected
Scan Target Mass	Select to display the data trace as the specified mass with one to three adducts (extracted ion or extracted ions). If Save Spectra was selected (it is by default), the data for the full scan range will be saved and can be viewed as spectral data.	Cleared
Scan Target Mass Target	Enter the mass.	100 amu
Scan Target Mass Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
SIM	Select to monitor a target mass with adducts (Selected Ion Monitoring).	Cleared
SIM Target	Enter the mass.	100 amu
SIM Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
Polarity		
Positive Ions	Select to form positive ions. Adduct values are added to the target when forming positive ions.	Selected
Negative Ions	Select to form negative ions. Adduct values are subtracted from the target when forming negative ions.	Cleared

VERITY 1920 MS Positive/Negative Detector Settings

This task sets the data collection parameters for each selected channel for the VERITY 1920 MS Detector and allows setting positive/negative polarity independently for each channel, whereas the VERITY 1920 MS Detector Settings task only allows setting positive/negative polarity for all channels (all positive or all negative). Only one settings task should be used in a method.

When performing positive/negative scan switching, collecting positive scan data on channel 1 and negative scan data on channel 2, SIM data cannot be collected; however, target mass data can be collected.



For information about the task properties, refer to:

VERITY 1920 MS Positive/Negative Detector Settings Properties

VERITY 1920 MS Positive/Negative Detector Settings Properties

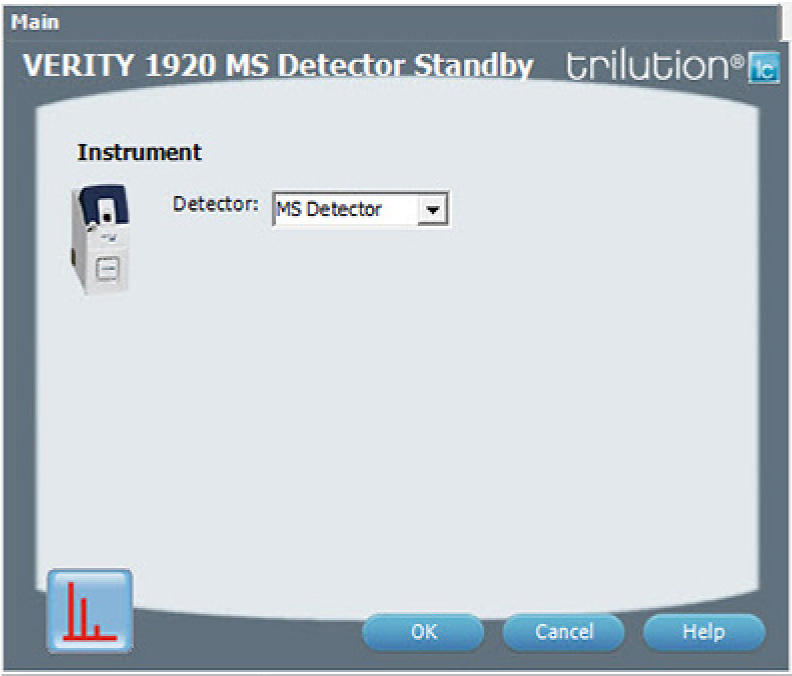
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Data Alignment Time	Shifts the retention time of the mass spec peak to align with the UV peak. Only positive values are allowed, which shifts the MS data trace to the right. If the primary channel is an MS channel, this value must be set to 0 (which is the default). Additionally, the value for Fraction Collection Delay Volume (on the liquid handler configuration property page) will need to be modified.	0 min
Scan Settings		
Range	Enter the beginning and ending masses in the full scan range. (Range limits 10–2000 m/z.)	100–500 m/z
Save Spectra	Select to save the spectral data from a scan at the end of the run. If choosing not to save spectra, the fraction spectra will still be saved.	Selected
Settings		
Channel	Select channel number for which data collection parameters will be set. Repeat for each channel to be used. (1–5)	1
Scan	Select to monitor a specified scan range.	Selected
Scan All Masses	Select to display the data trace as the total ion count for the masses within the specified scan range. Do not associate an analysis with the data channel used for the scan of all masses. An analysis can be browsed in post-run and data re-analyzed.	Selected
Scan Target Mass	Select to display the data trace as the specified mass with one to three adducts (extracted ion or extracted ions). If Save Spectra was selected (it is by default), the data for the full scan range will be saved and can be viewed as spectral data.	Cleared

VERITY 1920 MS POSITIVE/NEGATIVE DETECTOR SETTINGS PROPERTIES CONTINUED ON PAGE 597

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Scan Target Mass Target	Enter the mass.	100 amu
Scan Target Mass Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
Scan Target Mass Positive	Select to form positive ions. Adduct values are added to the target when forming positive ions.	
Scan Target Mass Negative	Select to form negative ions. Adduct values are subtracted from the target when forming negative ions.	
SIM	Select to monitor a target mass with adducts (Selected Ion Monitoring).	Cleared
SIM Target	Enter the mass.	100 amu
SIM Adduct	Enter values for one to three adducts. Select the box for adducts to be used and then enter a value for each. Intensity Displayed = (Intensity of Mass + Adduct 1) + (Intensity of Mass + Adduct 2) + (Intensity of Mass + Adduct 3)	1 m/z
SIM Positive	Select to form positive ions. Adduct values are added to the target when forming positive ions.	Selected
SIM Negative	Select to form negative ions. Adduct values are subtracted from the target when forming negative ions.	Cleared

VERITY 1920 MS Detector Standby

This task puts the VERITY 1920 MS Detector in standby.



For information about the task properties, refer to:

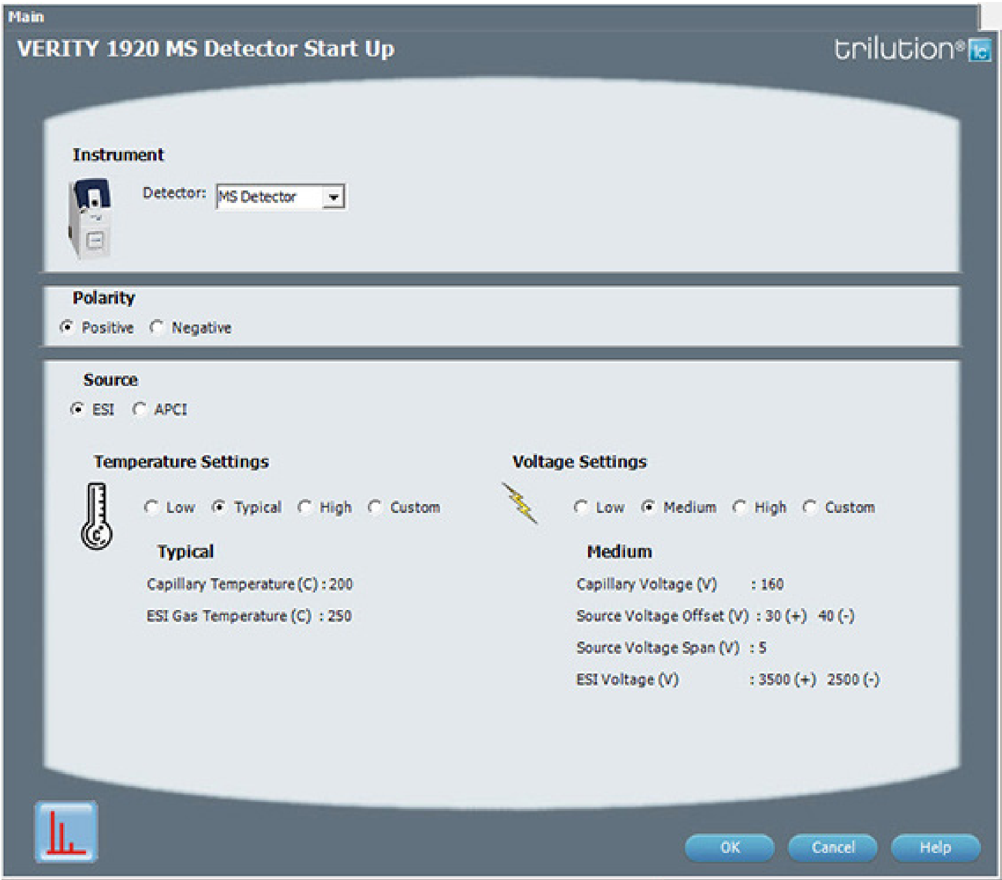
VERITY 1920 MS Detector Standby Properties

VERITY 1920 MS Detector Standby Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector

VERITY 1920 MS Detector Start Up

This task sets the temperature and voltage on the VERITY 1920 MS.



For information about the task properties, refer to:
VERITY 1920 MS Detector Start Up Properties:

VERITY 1920 MS Detector Start Up Properties

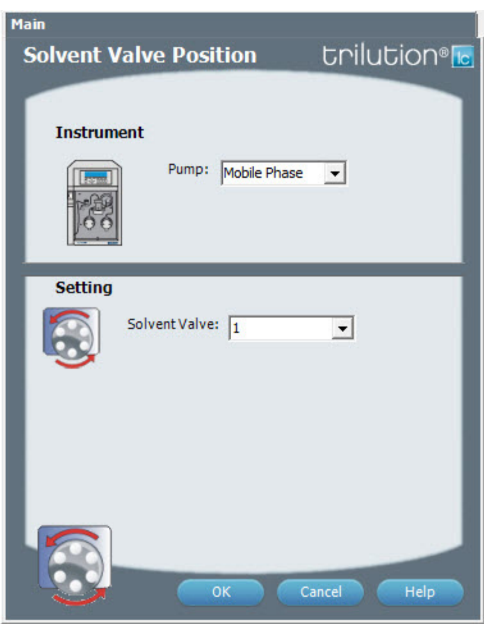
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Detector	The detector that the task will affect.	MS Detector
Polarity	Select Positive or Negative.	Positive
Source	Select the installed ion source: ESI or APCI.	ESI
Temperature	Select Low, Typical, High, or Custom for the temperature settings. The actual values use for each setting vary by source (ESI or APCI). If Custom is selected, enter the desired temperature settings.	Typical
Voltage	Select Low, Medium, High, or Custom for the voltage (Fragmentation) settings. The actual values used for each setting vary by source (ESI or APCI). If custom is selected, enter the desired voltage/ fragmentation settings.	Medium

VARIABLES IDENTIFICATION OR DESIGNATION

Temperature (°C)	LOW		TYPICAL		HIGH	
Capillary Temperature	135		200		250	
ESI Gas Temperature	135		250		350	
APCI Temperature	250		350		400	
	Ionization Mode					
	Positive	Negative	Positive	Negative	Positive	Negative
Fragmentation (Volts)	LOW		MEDIUM		HIGH	
Capillary Voltage	120		160		180	
Source Voltage Offset	20	25	30	40	40	55
Source Voltage Span	0		5		20	
ESI Voltage	3500	2500	3500	2500	3500	2500
APCI Corona Discharge	5		5		5	

VERITY 3240 Solvent Valve Position

This task switches the solvent valve on the specified pump head.



For more information about the task properties, refer to:
Solvent Valve Position Properties

VERITY 3240 Solvent Valve Position Properties

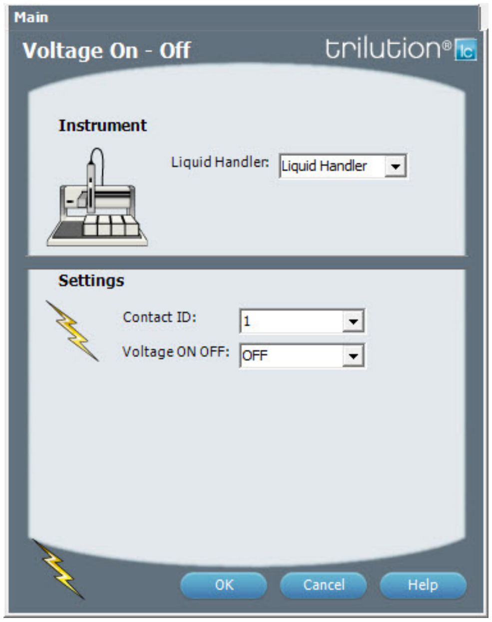
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Pump	The pump that the task will affect.	Pump

VERITY 3240 SOLVENT VALVE POSITION PROPERTIES CONTINUED ON PAGE 601

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Solvent Valve	The desired position of the solvent valve on the Pump. Valid range is 1–6.	1
Pump Head	The pump head that the task will affect.	A

Voltage On - Off

This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.



For more information about the properties on each tab, refer to:

Voltage On - Off Properties

Voltage On - Off Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	Liquid Handler
Contact ID	Enter the number that corresponds to the output contact to act on for the liquid handler selected.	1
Voltage ON OFF	The action to occur: open and power off (OFF) or close and power on (ON) the Contact ID.	OFF

Wait Time

This task waits a specified length of time and displays an optional message. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.

For more information about the properties on each tab, refer to:

Wait Time Properties

Wait Time - Sequence of Steps

Wait Time - Sequence of Steps

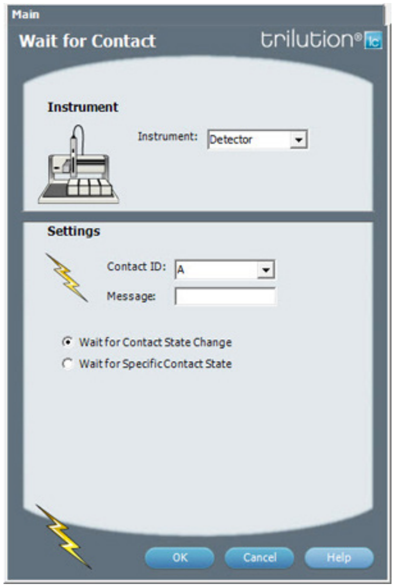
Wait for Wait Time to elapse while displaying the optional Message.

Wait Time Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Message	Enter the text to display in the message box during the wait time.	
Wait Time	The time the program waits before starting the next task.	0 min

Wait for Contact

This task initiates a wait in the method until any contact state change or a user-specified contact state change for the specified contact is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.



For more information about the properties on each tab, refer to:

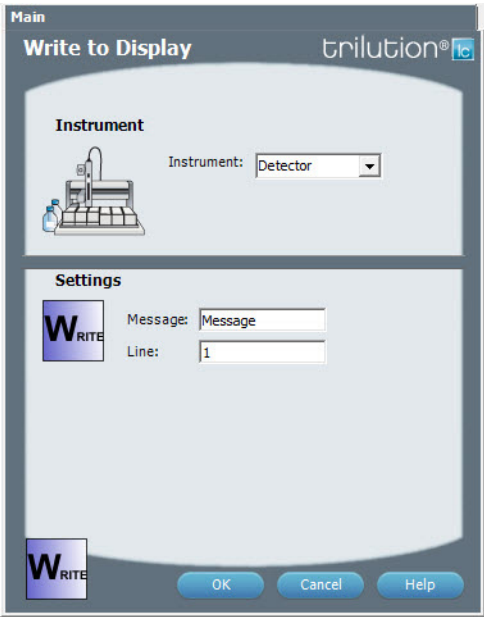
Wait for Contact Properties

Wait for Contact Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument	The instrument that the task will affect.	Liquid Handler
Contact ID	The input contact being monitored for a state change.	A
Message	Enter the text to display in the message box.	
Wait for Contact State Change	Select to initiate a wait in the method until any contact state change of the specified contact (Contact ID) is detected. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.	Selected
Wait for Specific Contact State Closed (On)	Select to initiate a wait in the method until the specified contact (Contact ID) closes. Sync to the end of the task (using a Sync Task) to prevent other tasks in the method from executing during the wait.	
Wait for Specific Contact State Open (Off)	Select to initiate a wait in the method until the specified contact (Contact ID) opens. Sync to the end of the task (using a Sync task) to prevent other tasks in the method from executing during the wait.	

Write to Display

This task displays a message in the front panel display of the selected instrument.



For more information about the properties on each tab, refer to:

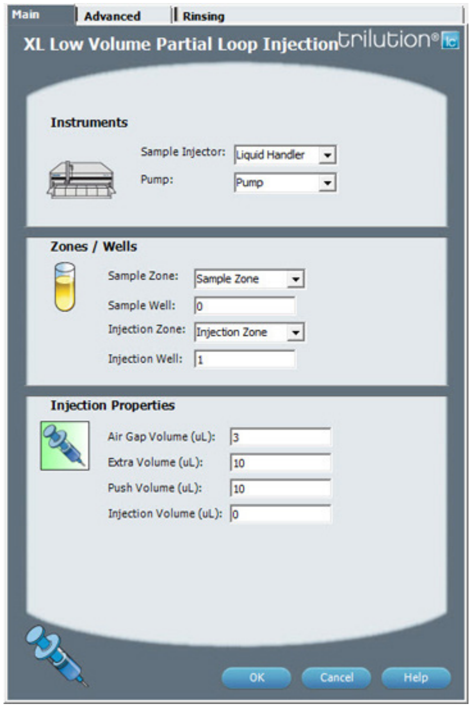
Write to Display Properties

Write to Display Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument	The instrument that the task will affect.	Liquid Handler
Message	Enter the text to display on the front panel of the Instrument.	Message
Line	For two-line displays, indicate the line on which to display the message.	1

XL Low Volume Partial Loop Injection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.



For more information about the properties on each tab, refer to:

XL Low Volume Partial Loop Injection Properties - Main

XL Low Volume Partial Loop Injection Properties - Advanced

XL Low Volume Partial Loop Injection Properties - Rinsing

XL Low Volume Partial Loop Injection - Sequence of Steps

XL Low Volume Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch Dilutor Valve to Probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Switch Dilutor Valve to Reservoir and aspirate Push Volume at Aspirate Flow Rate.

3. Move to Sample Well in Sample Zone.
4. Lower probe into well to Sample Z Option and Sample Z Offset.
5. Switch Dilutor Valve to Probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
6. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume + Push Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to Reservoir and aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
3. Switch dilutor valve to probe and dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Switch dilutor valve to probe dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

XL Low Volume Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

XL LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 608

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	2.2 mm

XL Low Volume Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Injector	The sample injector that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

XL Low Volume Partial Loop Injection Properties - Rinsing

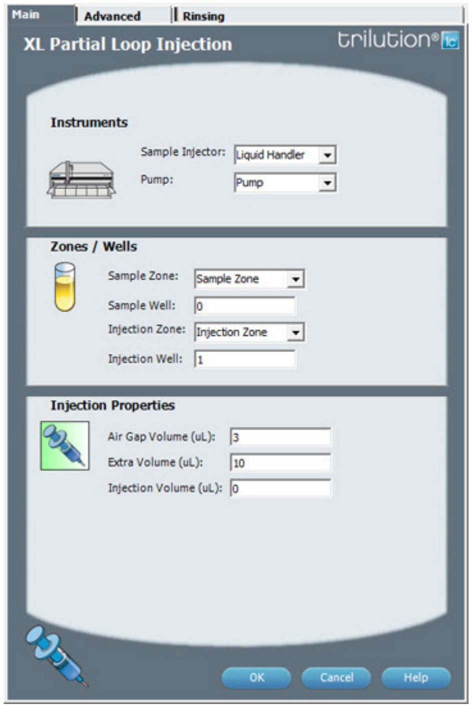
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

XL LOW VOLUME PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 610

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

XL Partial Loop Injection

This task performs a partial loop injection.



For more information about the properties on each tab, refer to:

XL Partial Loop Injection Properties - Main

XL Partial Loop Injection Properties - Advanced

XL Partial Loop Injection Properties - Rinsing

XL Partial Loop Injection - Sequence of Steps

XL Partial Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset
3. Dispense Extra Volume at Dispense Flow Rate.
4. Switch injection valve to LOAD.
5. Wait 1.2 sec.
6. Dispense Injection Volume at Dispense Flow Rate.
7. Wait Injection Equilibration Time.
8. Synchronize.
9. Switch Injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to Reservoir and aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
3. Switch dilutor valve to probe and dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Switch dilutor valve to probe dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

XL Partial Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min

XL PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 613

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of six defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared

XL PARTIAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 614

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Injection Z Option	One of six defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	2.2 mm

XL Partial Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Injector	The sample injector that the task will affect.	Liquid Handler
Pump	The pump that the task will affect.	Pump
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL

XL Partial Loop Injection Properties - Rinsing

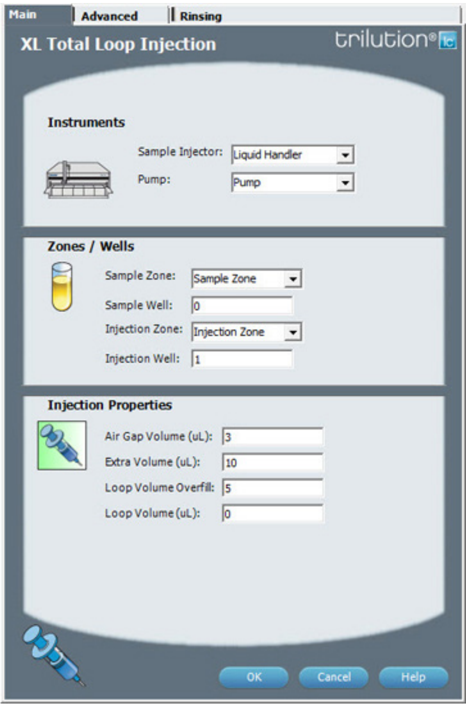
PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

XL PARTIAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 615

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset.	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

XL Total Loop Injection

This task performs a total loop injection.



For more information about the properties on each tab, refer to:

XL Total Loop Injection Properties - Main

XL Total Loop Injection Properties - Advanced

XL Total Loop Injection Properties - Rinsing

XL Total Loop Injection - Sequence of Steps

XL Total Loop Injection - Sequence of Steps

The following is an overview for the sequence of steps.

1. Initialize
2. Aspirate
3. Inject
4. Injection Port Rinse
5. Outside Rinse

INITIALIZE

1. Move Z to Z Safe Height.
2. Set injection valve to INJECT.
3. Move to Drain Well in Drain Zone.
4. Lower probe into well to Drain Z Option and Drain Z Offset.
5. Home dilutor.
6. Move Z to Z Safe Height.

ASPIRATE

1. Switch Dilutor Valve to Probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2. Move to Sample Well in Sample Zone.
3. Lower probe into well to Sample Z Option and Sample Z Offset.

4. Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.
5. Move Z to Z Safe Height.

INJECT

1. Move to Injection Well in Injection Zone.
2. Lower probe into well to Injection Z Option and Injection Z Offset
3. Switch injection valve to LOAD.
4. Wait 1.2 sec.
5. Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.
6. Wait Injection Equilibration Time.
7. Synchronize.
8. Switch Injection valve to INJECT.

INJECTION PORT RINSE

1. Home dilutor.
2. Switch dilutor valve to Reservoir and aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
3. Switch dilutor valve to probe and dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4. Repeat steps 2–3 until requested rinse volume is aspirated and dispensed.
5. Move Z to Z Safe Height.

OUTSIDE RINSE

1. Move to Outside Rinse Well in Outside Rinse Zone.
2. Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3. Home dilutor.
4. Switch dilutor valve to reservoir aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
5. Switch dilutor valve to probe dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6. Repeat steps 4–5 until requested rinse volume is aspirated and dispensed.
7. Move Z to Z Safe Height.

XL Total Loop Injection Properties - Advanced

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min

XL TOTAL LOOP INJECTION PROPERTIES - ADVANCED CONTINUED ON PAGE 618

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	The time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	0.05 min
Sample Z Option	One of five defined reference points used when aspirating the Injection Volume and Extra Volume from the bed: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Sample Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the sample list to use this option. When cleared, the probe will not follow the liquid down as it is aspirated from the Sample Zone.	Cleared
Injection Z Option	One of five defined reference points used when injecting the Injection Volume and Push Volume: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Injection Z Offset value to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	2.2 mm

XL Total Loop Injection Properties - Main

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Sample Injector	The sample injector that the task will affect.	Liquid Handler

XL TOTAL LOOP INJECTION PROPERTIES - MAIN CONTINUED ON PAGE 619

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Pump	The pump that the task will affect.	Liquid Handler
Sample Zone	The zone from which the Injection Volume and Extra Volume are aspirated.	Sample Zone
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5
Loop Volume	The capacity of the installed sample loop.	0 µL

XL Total Loop Injection Properties - Rinsing

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Drain Zone	The zone in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points used when purging to the drain: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Drain Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	2
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and in to the injection port.	4 mL/min
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

XL TOTAL LOOP INJECTION PROPERTIES - RINSING CONTINUED ON PAGE 620

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Outside Rinse Z Option	One of five defined reference points used when performing the outside rinse: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Absolute Value: Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

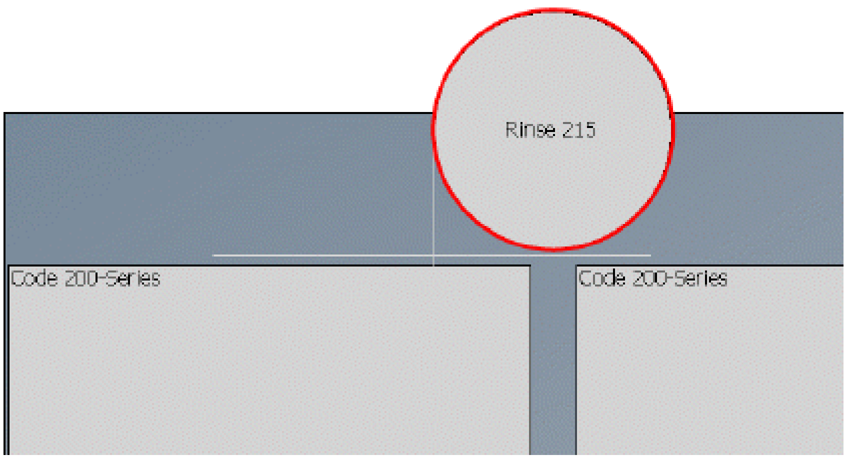
RINSE LOCATIONS

Rinse locations are assigned to zones in the bed layout. Inside and outside rinse zones are then chosen in the task.

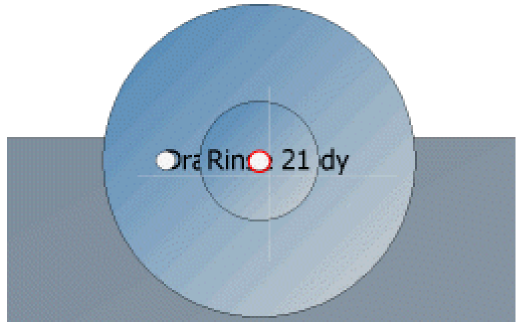
Recommended rinse positions for the following instruments are described:

- 215 Liquid Handler
- GX-241 II Liquid Handler without Pump
- GX-271 Liquid Handler
- GX-281 Liquid Handler

215 Liquid Handler

BED LAYOUT TRAYS (TEMPLATES)
215 6-Position for AutoMix
215 for Code 517 Rack
215 for Five Code 200-Series Racks
215 for Seven XL Racks
Rinse 215 (Footprint)
 Rinse 215
Drain 215 Body
Rinse 215 Insert
Rinse 215 Deep Short Insert
Rinse 215 Deep Tall Insert
Rinse 215 Flow-Through Short Insert
Rinse 215 Flow-Through Tall Insert
Rinse 215 Shallow Short Insert
Rinse 215 Shallow Tall Insert

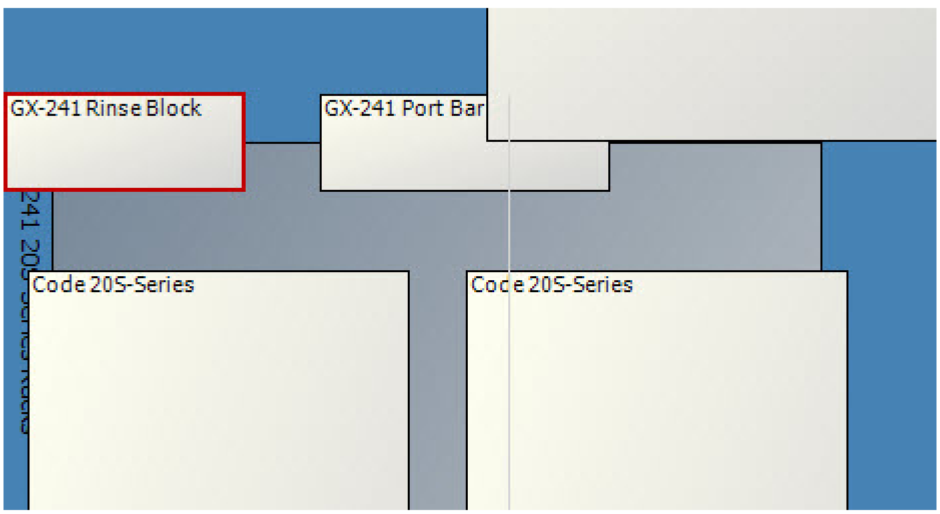
Inside Rinse Location (Left Well)



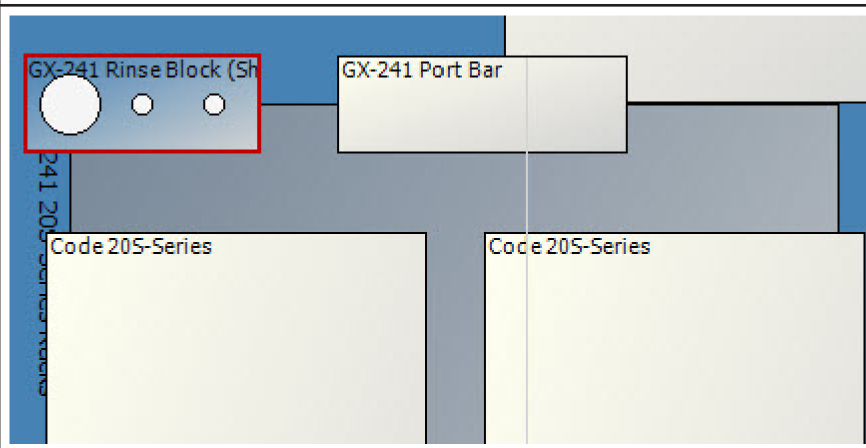
Outside or Flow-Through Rinse Location (Center Well)

GX-241 II Liquid Handler without Pump

BED LAYOUT TRAYS (TEMPLATES)	
GX-241 20S-Series Racks	
	GX-241 Rinse Block

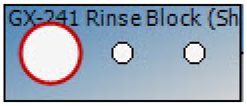
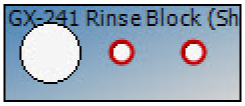


	GX-241 Rinse Block (Short)

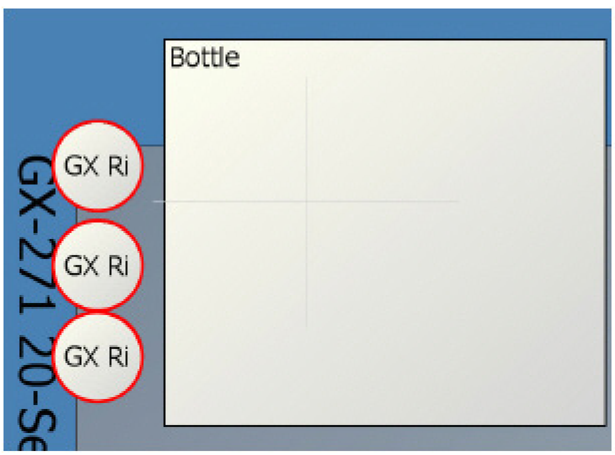


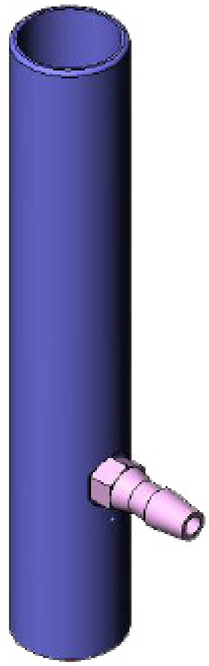
GX-241 Rinse Block (Short)

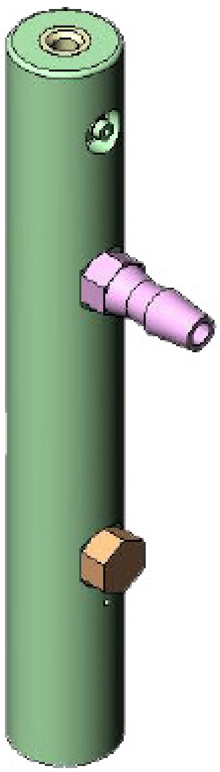
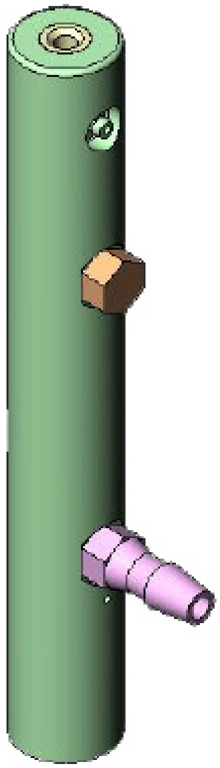
	TRILUTION Label

 Inside Rinse/Drain Location (Left Well)	Inside Rinse/Drain Location (Left Well)	GX-241 Rinse Block Drain (Short)
 Outside Rinse Locations	Outside Rinse Locations	GX-241 Rinse Block Rinse (Short)

GX-271 Liquid Handler

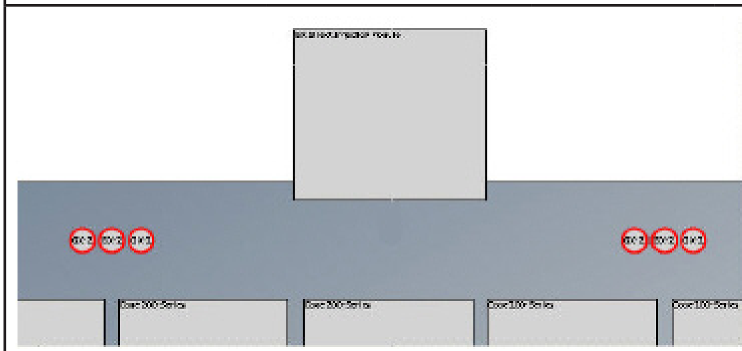
BED LAYOUT TRAY (TEMPLATE)
GX-271 20- and 12X-Series Racks with Direct Inject
GX-271 20-Series Racks
GX-271 20-Series Racks with Direct Inject
GX-271 200-Series Racks
GX-271 200-Series Racks with Direct Inject
GX Rinse Stations (Footprints)
 GX Rinse Stations

 Drain/Rinse Station for Inside Rinse of Probe		**Drain/Rinse Station GX Short (Rack)**		
	Inside Rinse	125	26034554	
	Drain/Rinse Station GX Short (56 mm Probe) (Rack)			
	Inside Rinse	125	26034554	
	Drain/Rinse Station GX Tall (Rack)			
	Inside Rinse	175	26034555	
	Drain/Rinse Station GX Extra Tall (Rack)			
	Inside Rinse	210	26034556	

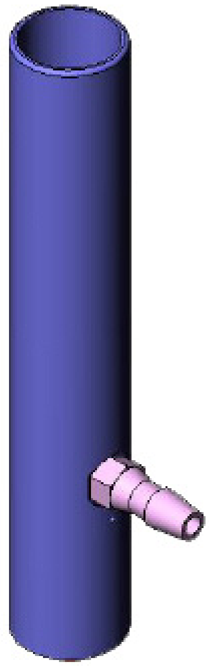
<table>
<tr><td rowspan="12">
Rinse Station for Outside Rinse of Probe (Static)</td><td rowspan="12">
Rinse Station for Outside Rinse of Probe (Flowing)</td><td colspan="3">Rinse Station GX Short (Rack)</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Outside Rinse (static or flowing)</td><td>125</td><td>26034552</td></tr>
<tr><td colspan="3">Rinse Station GX Short (56 mm Probe) (Rack)</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Outside Rinse (static or flowing)</td><td>125</td><td>26034552</td></tr>
<tr><td colspan="3">Rinse Station GX Tall (Rack)</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Outside Rinse (static or flowing)</td><td>175</td><td>26034551</td></tr>
<tr><td colspan="3">Rinse Station GX Extra Tall (Rack)</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Outside Rinse (static or flowing)</td><td>210</td><td>26034553</td></tr>
</table>

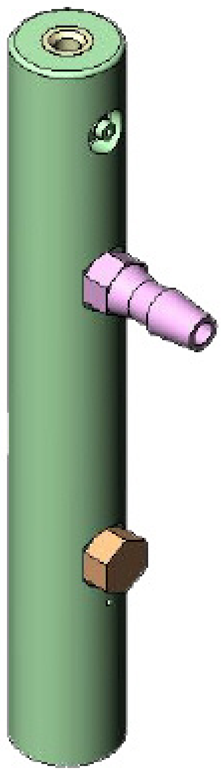
GX-281 Liquid Handler

BED LAYOUT TRAY (TEMPLATE)
GX-281
GX Rinse Stations (Footprints)

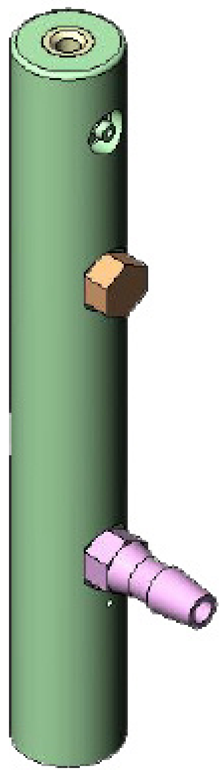


GX Rinse Stations

 Drain/Rinse Station for Inside Rinse of Probe		**Drain/Rinse Station GX Extra Tall (Rack)**		
	Inside Rinse	210	26034556	
	Drain/Rinse Station GX Tall (Rack)			
	Inside Rinse	175	26034555	
	Drain/Rinse Station GX Short (Rack)			
	Inside Rinse	125	26034554	



Rinse Station for Outside Rinse of Probe (Static)



Rinse Station for Outside Rinse of Probe (Flowing)

Rinse Station GX Extra Tall (Rack)		
Outside Rinse (static or flowing)	210	26034553
Rinse Station GX Tall (Rack)		
Outside Rinse (static or flowing)	175	26034551
Rinse Station GX Short (Rack)		
Outside Rinse (static or flowing)	125	26034552

PEAK INTEGRATION

When integrating, changing the Front and Back Slopes and/or the Peak Width values influence the area of the peak that is integrated and/or how many peaks are integrated. Changing the Peak Filter affects how many peaks are integrated.

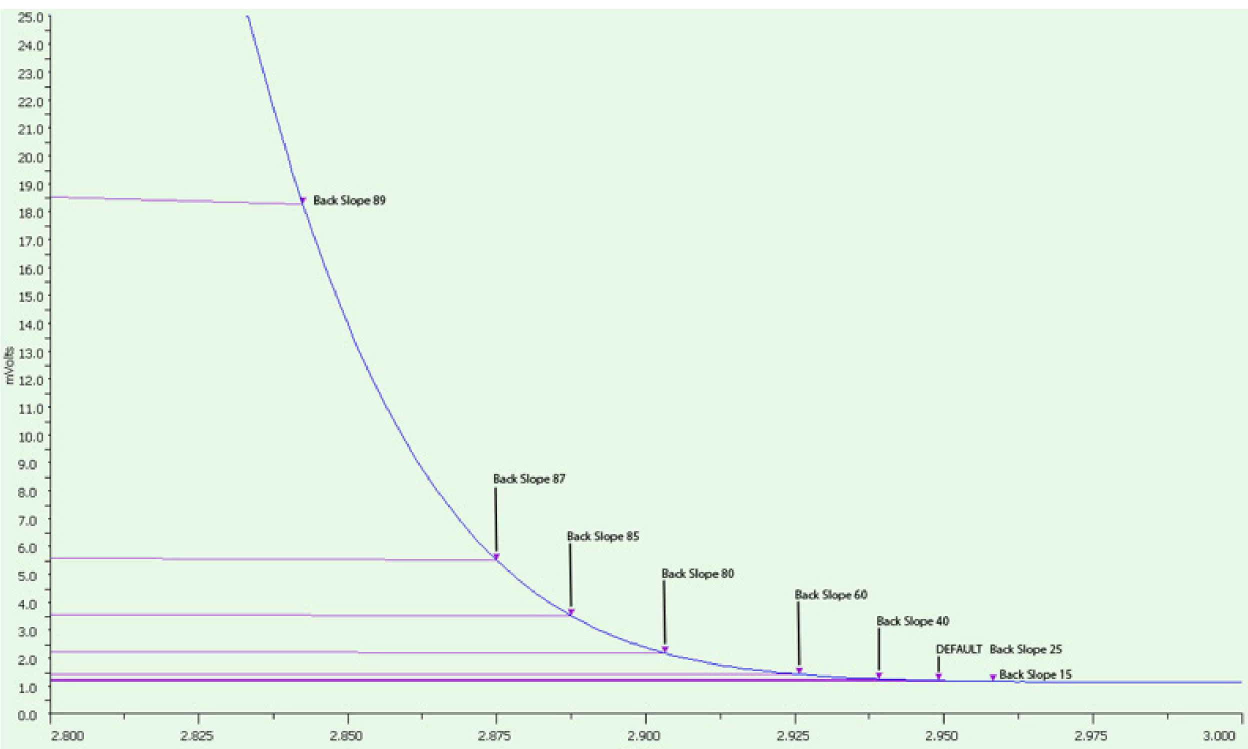
The following examples are provided:

- Effect of Slope on Area
- Effect of Slope on Number of Peaks
- Effect of Peak Width on Number of Peaks
- Effect of Peak Filter on Number of Peaks
- Effect of Baseline Selection

Effect of Slope on Area

Change Front and Back Slope

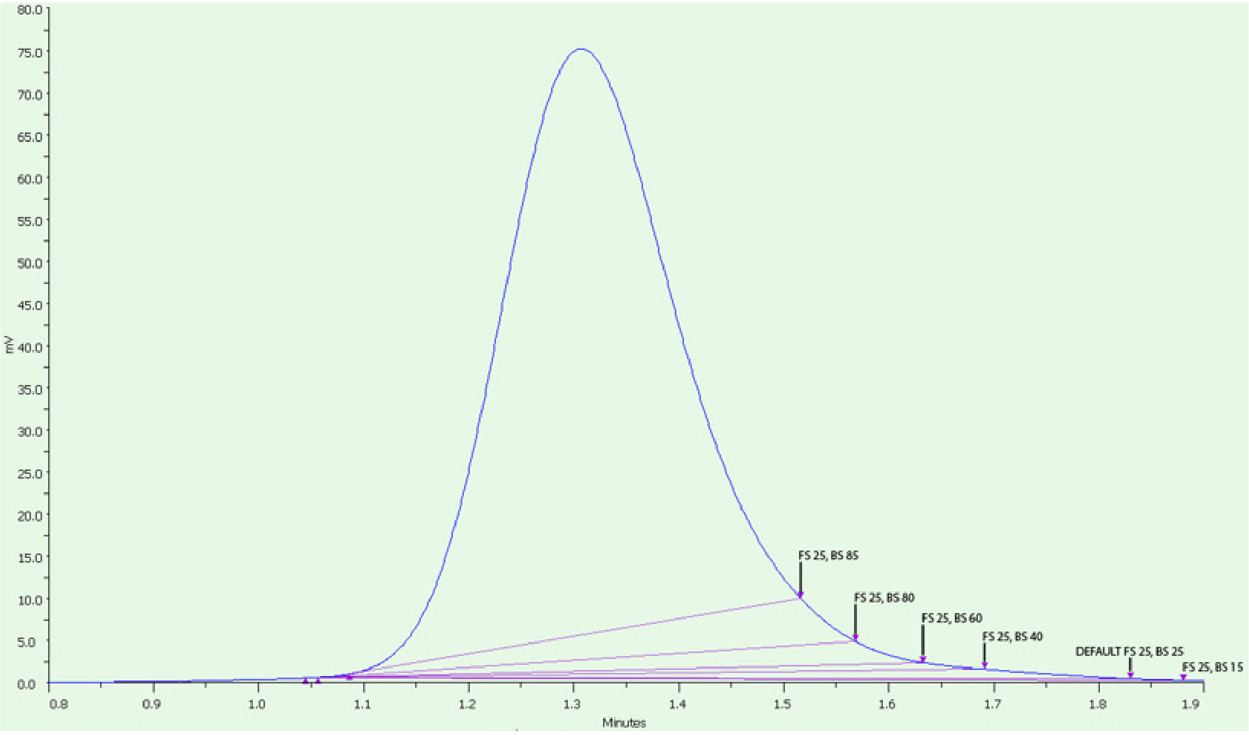
The **Front Slope** and **Back Slope** values were the same and were incrementally increased to show how changing the values affects the area of the peak that is integrated. **Peak Width** was held constant at the default of 0.20 min and the **Peak Filter** was 0.



Change Back Slope Only

If the peak has significant tailing, then the **Back Slope** value should be increased to reduce the area of the tail that is integrated or decreased to increase the area of the tail that is integrated.

The **Front Slope** value was held constant at the default of 25, **Peak Width** was 0.20 min, and **Peak Filter** was 0. Though the **Front Slope** value was held constant, the start of integration on the front of the peak was shifted to prevent the baseline from crossing the chromatogram trace.

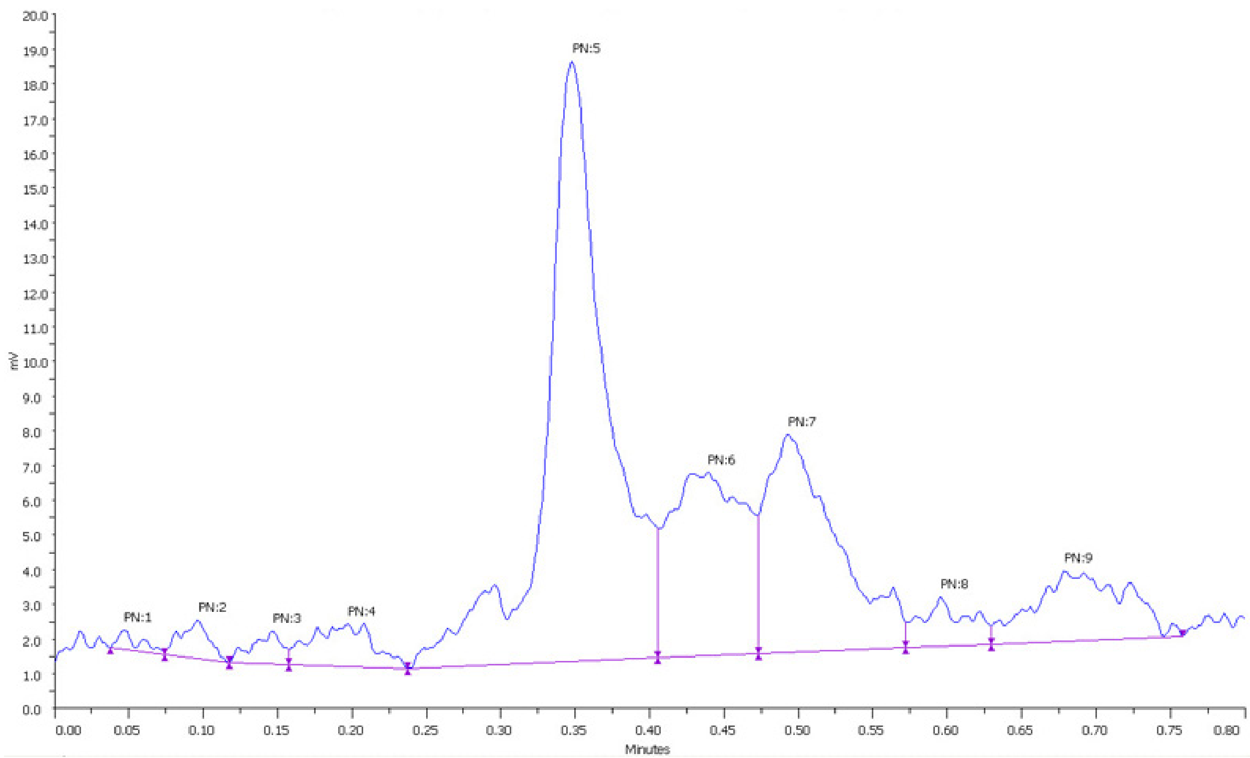


Effect of Slope on Number of Peaks

If the trace has a lot of noise, sethigher slope values to reduce the number of smaller peaks that are integrated or set . . . . lower slope values to increase the number of smaller peaks that are integrated. The **Peak Width** value was held constant at 0.20 min and **Peak Filter** was 0.

Front
Slope = 1

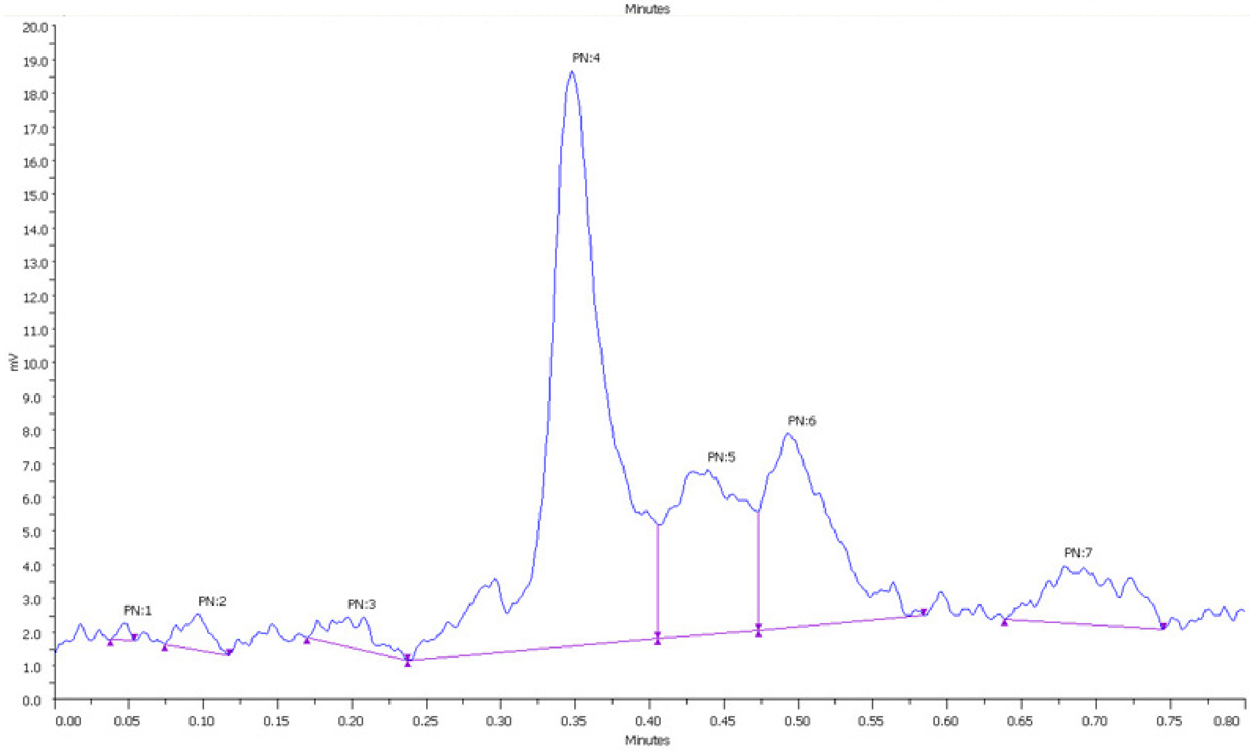
Back
Slope = 1



Front
Slope
= 25

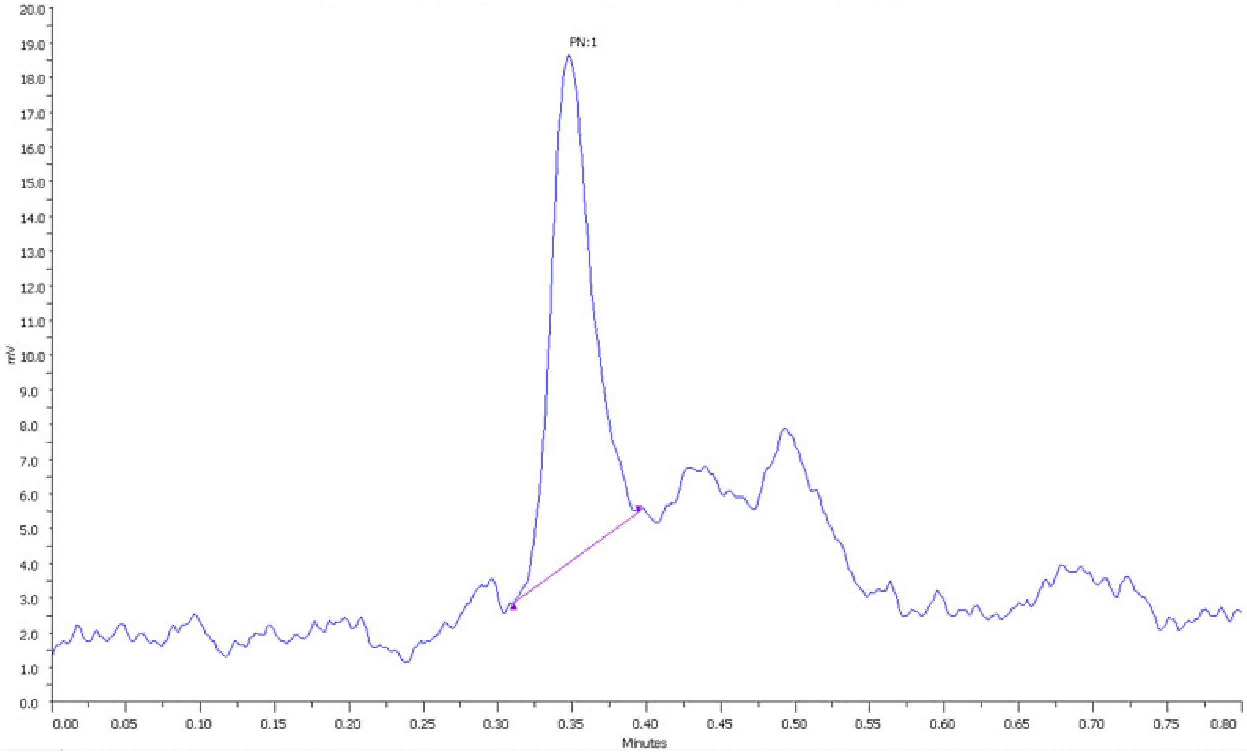
Back
Slope
= 25

DEFAULT



Front
Slope
= 80

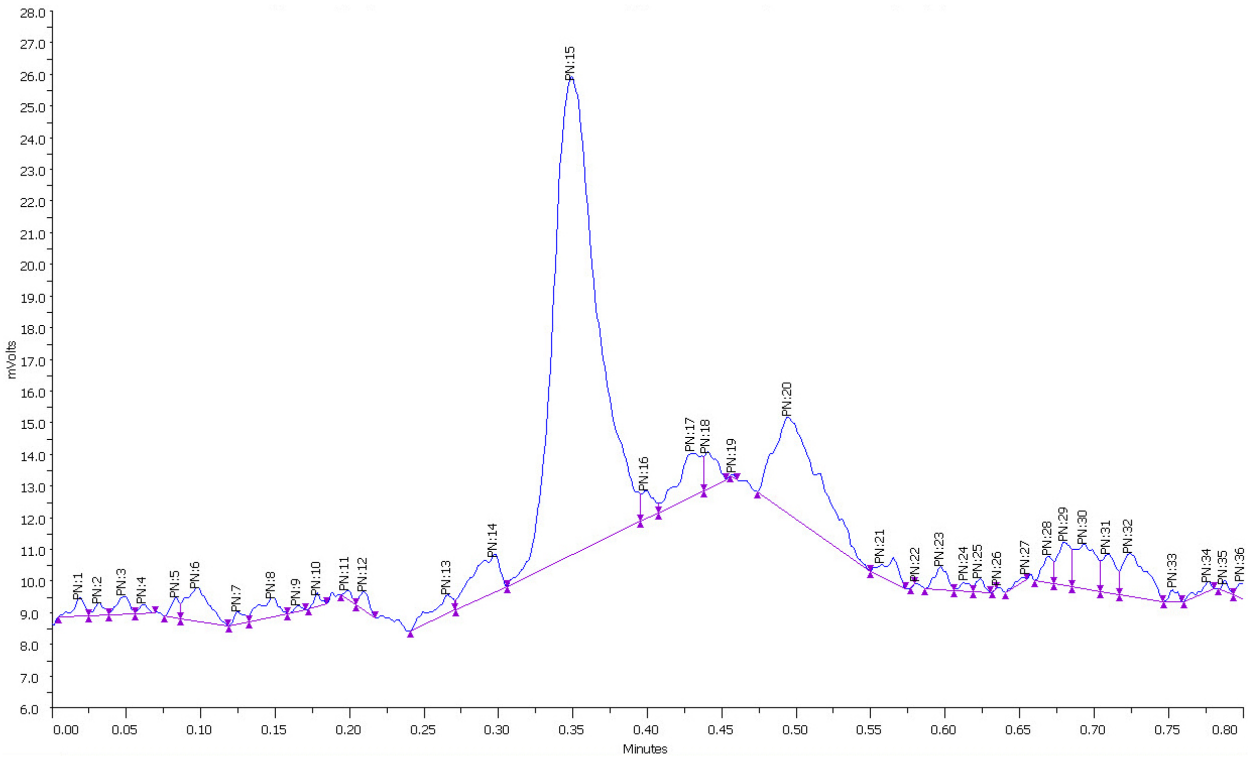
Back
Slope
= 80



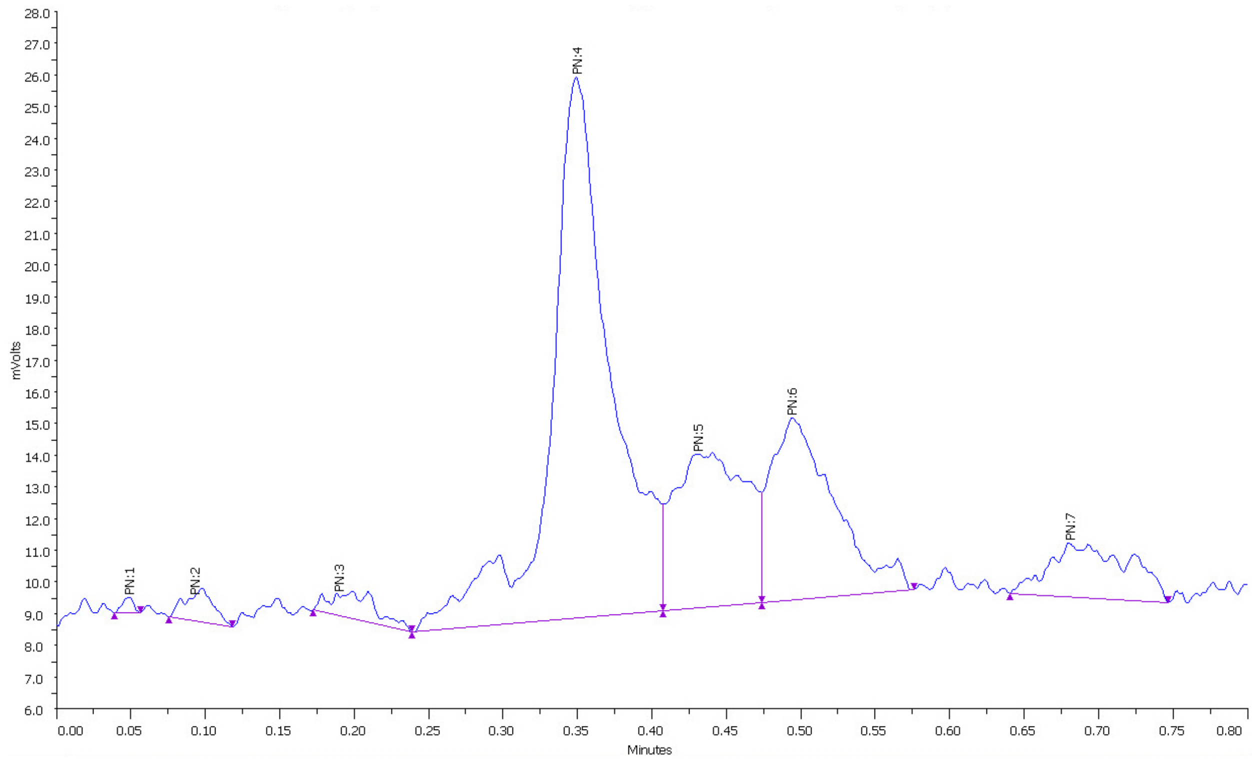
Effect of Peak Width on Number of Peaks

The **Peak Width** setting is the size of the data window that is used to calculate whether the slope condition has been met. The default is 0.20 min. If the trace has a lot of noise, set a higher value to reduce the number of smaller peaks that are integrated or set a lower value to increase the number of smaller peaks that are integrated. The **Front and Back Slope** values were held constant at 25 and **Peak Filter** was 0.

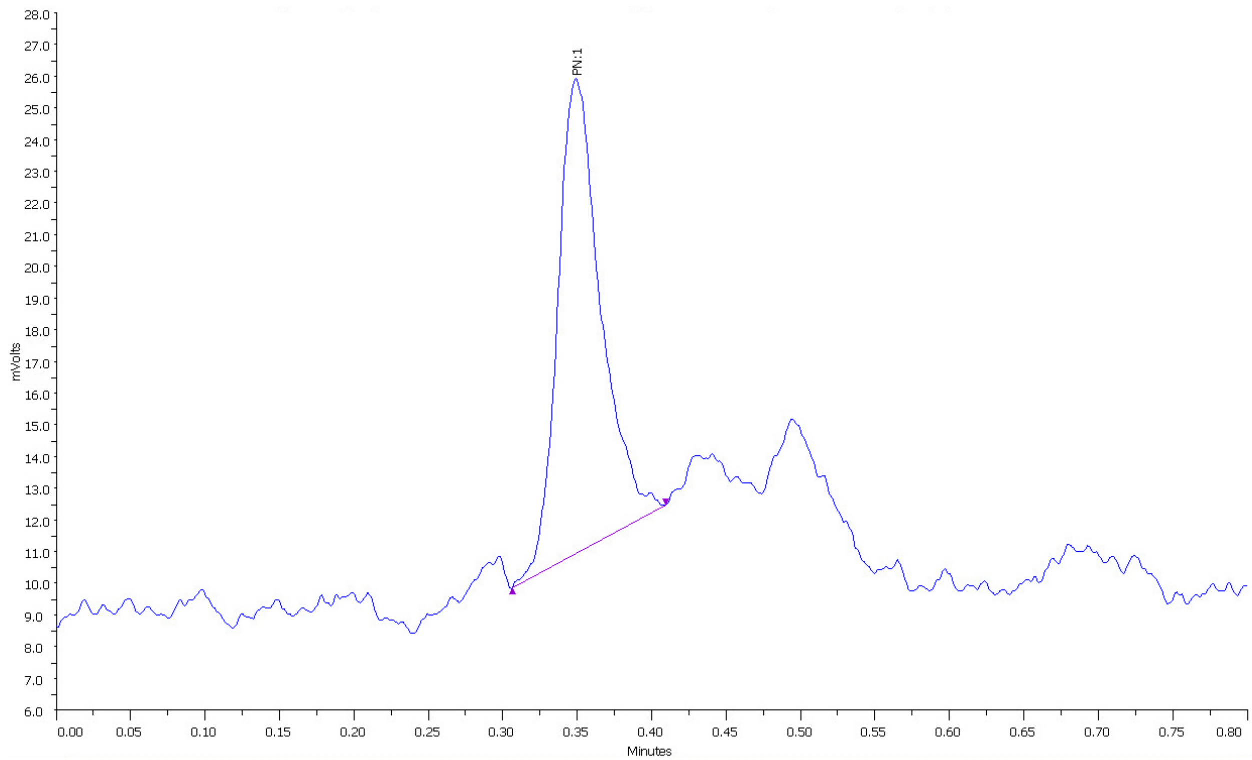
Peak Width = 0.03 min



Peak Width = 0.2 min DEFAULT



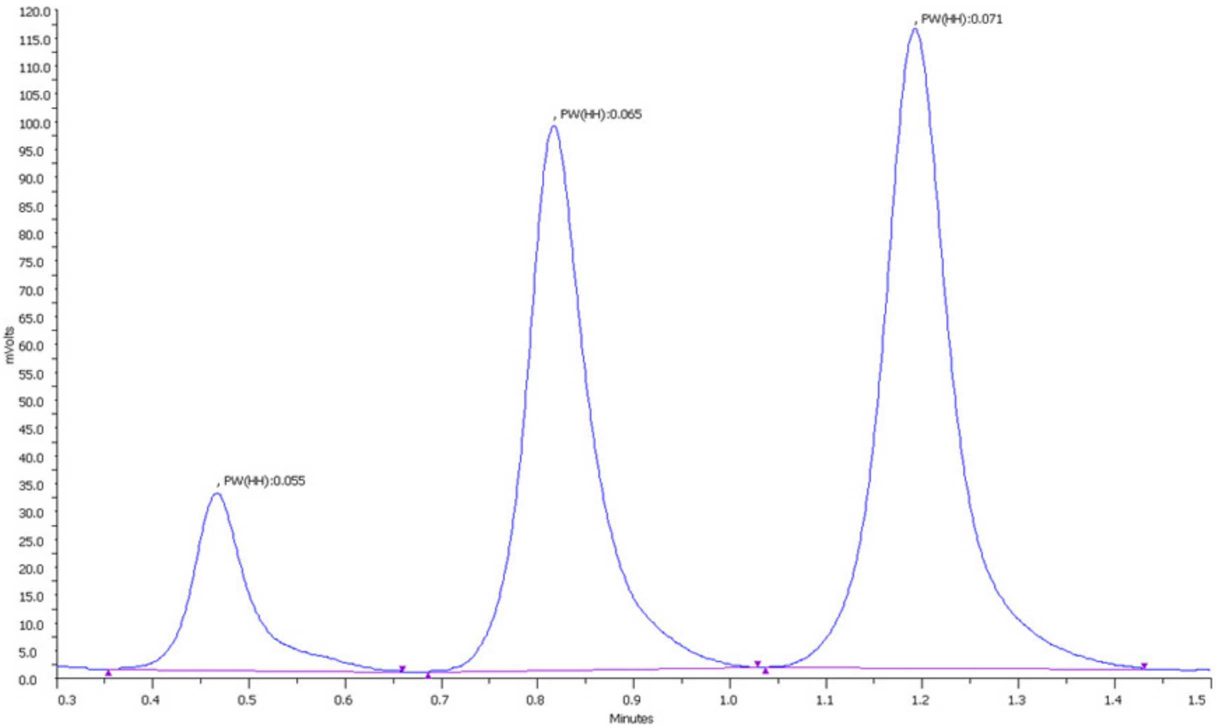
Peak Width = 0.7



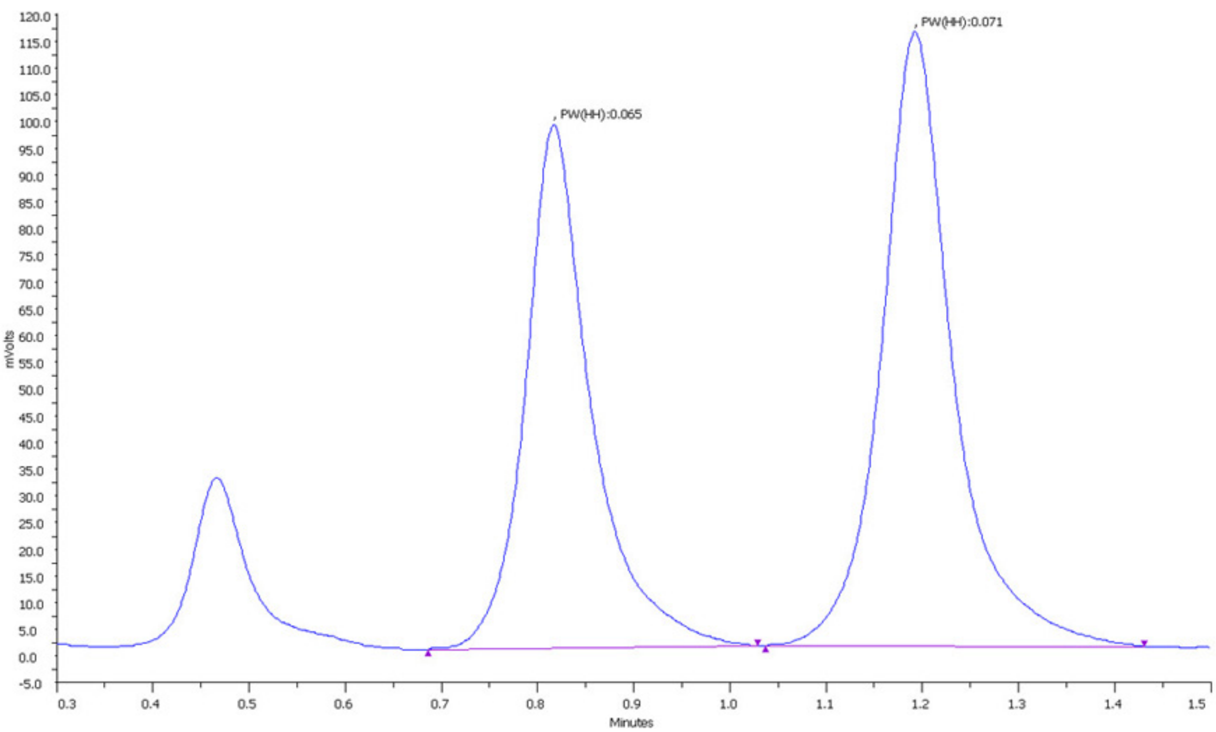
Effect of Peak Filter on Number of Peaks

Peak Filter was left at the default value of 0 (off, no filtering) and then it was set at 0.06 min to show how a peak will not be integrated if the peak width at half height is less than or equal to the Peak Filter setting. The Front Slope, Back Slope, and Peak Width values were held constant at the default values (25, 25, and 0.20).

Peak Filter = 0 min

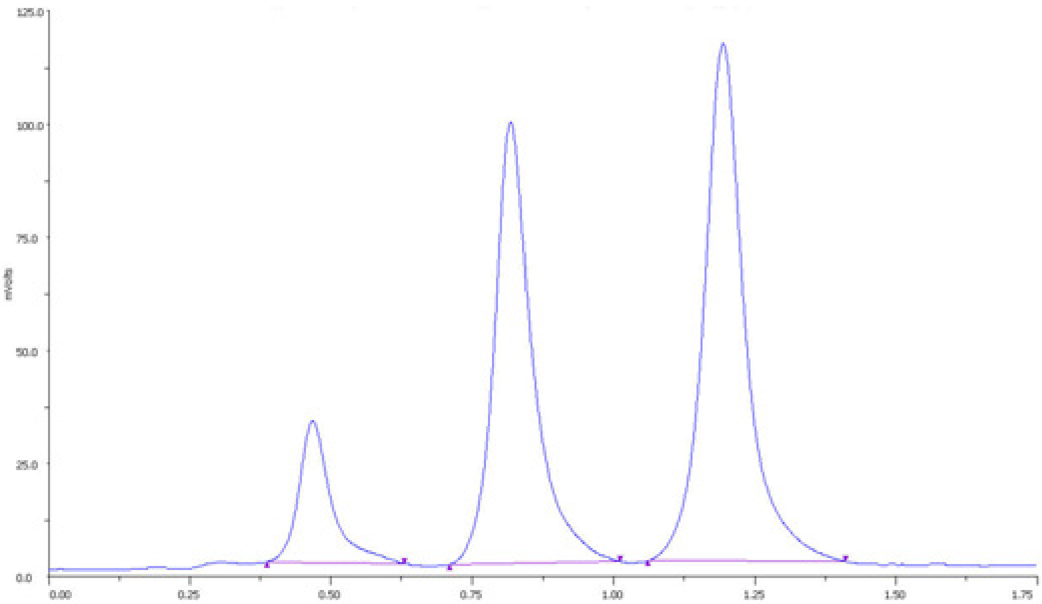


Peak Filter = 0.06 min

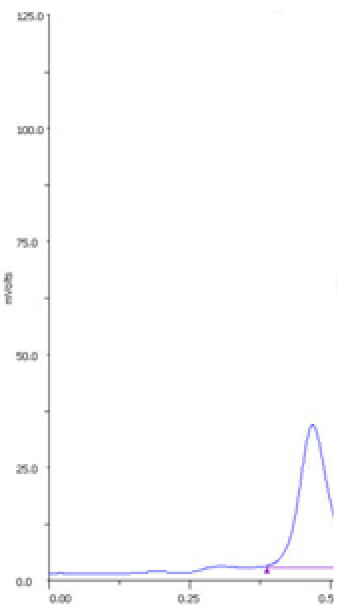


Effect of Baseline Selection

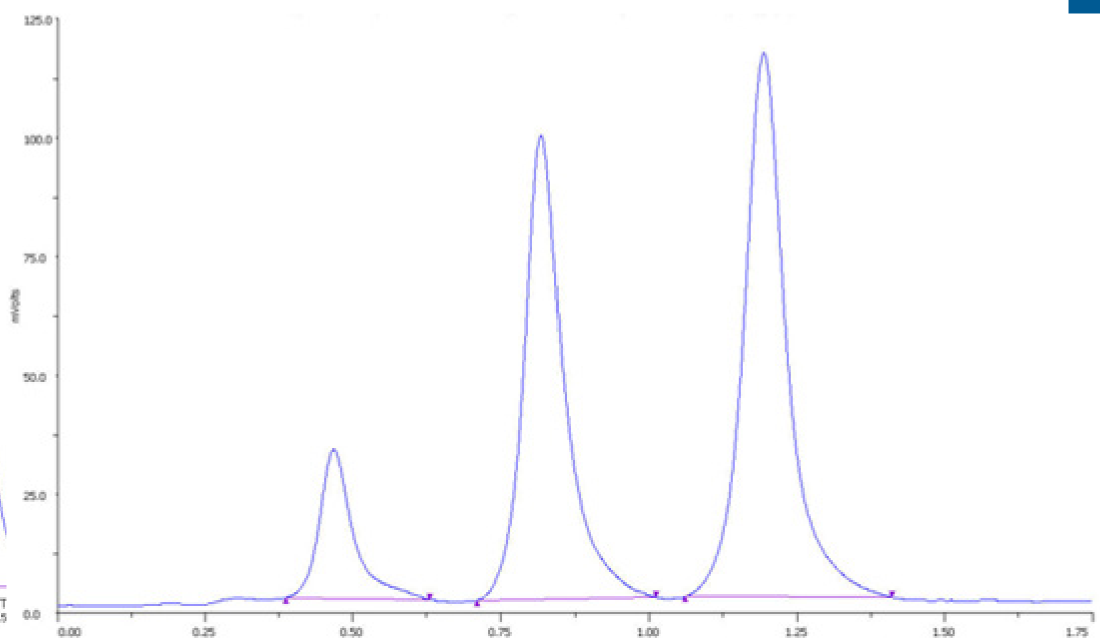
TRILUTION LC provides several baseline options. The examples that follow demonstrate changes to the baseline at time 0 (zero). The first example shows the effects on resolved peaks and the second example shows the effects on merged peaks.



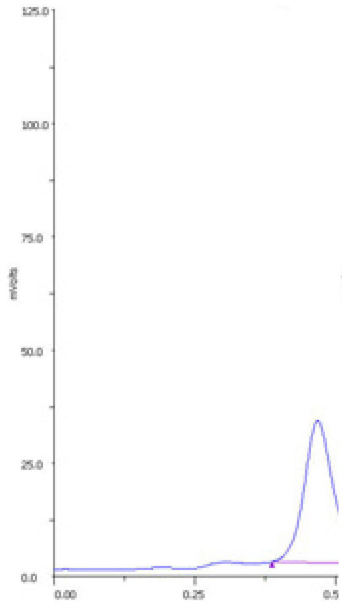
Default Baseline



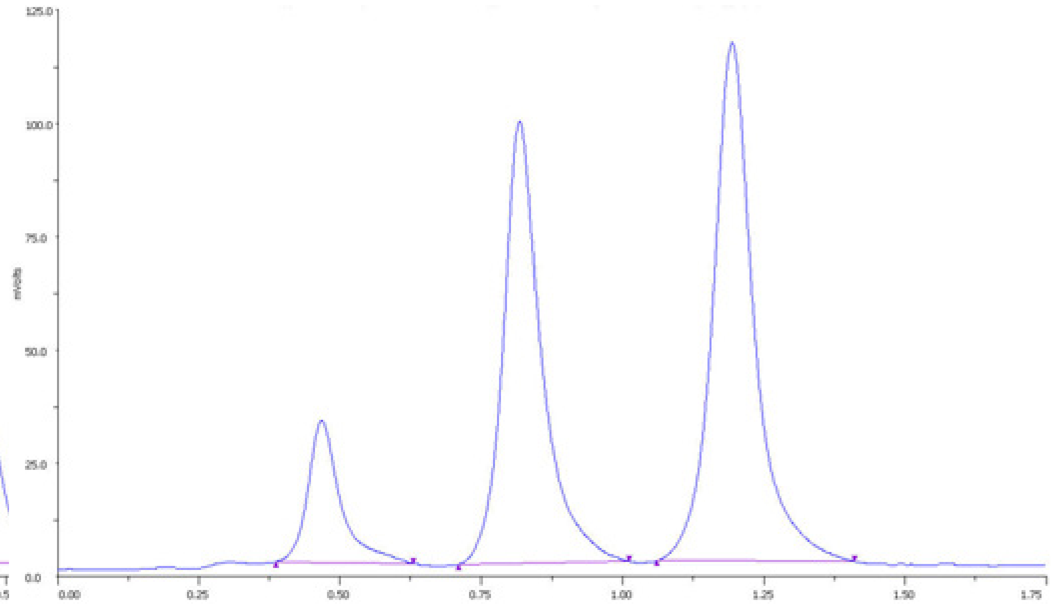
Horizontal Baseline



All Valleys Baseline

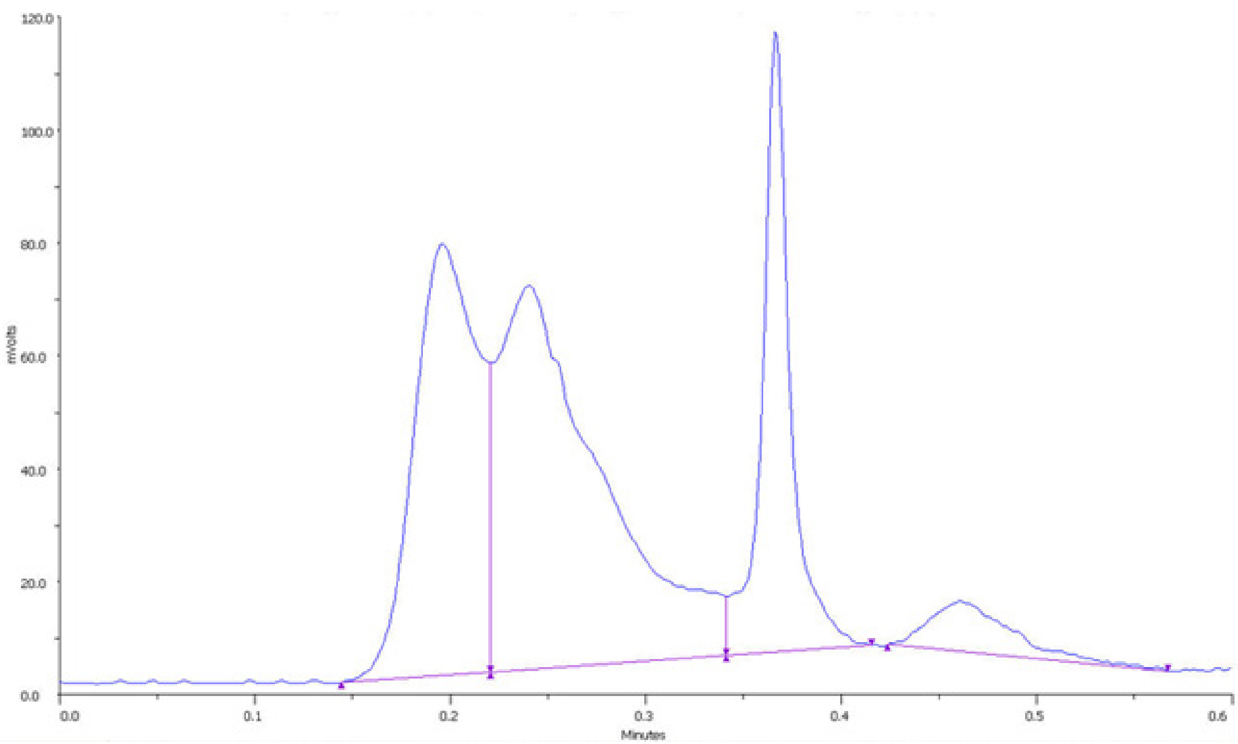


Tangent Skim Baseline

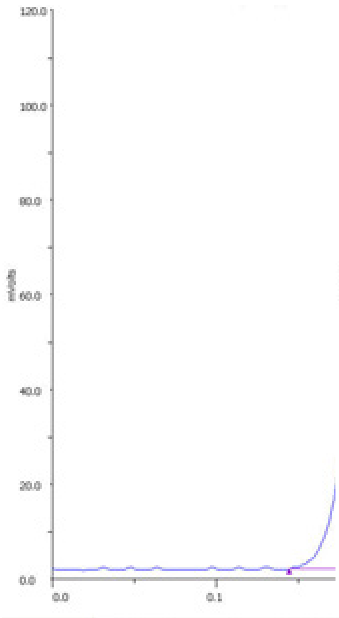


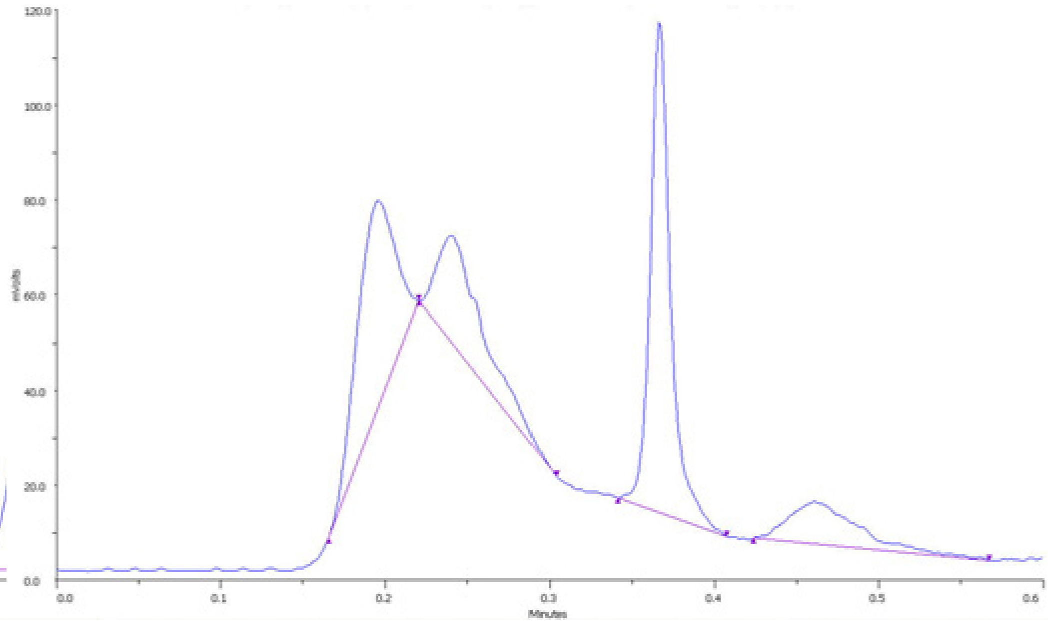
Next Valley Baseline

Resolved Peaks - Baseline Integration Task at Time 0

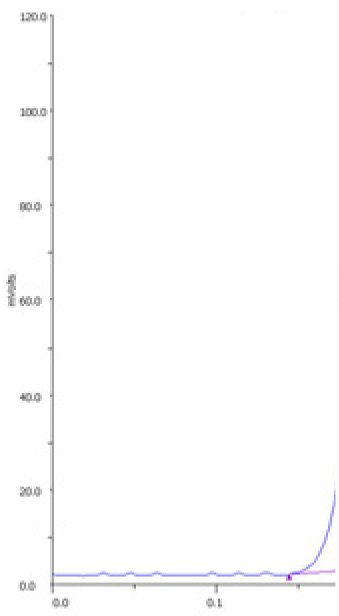


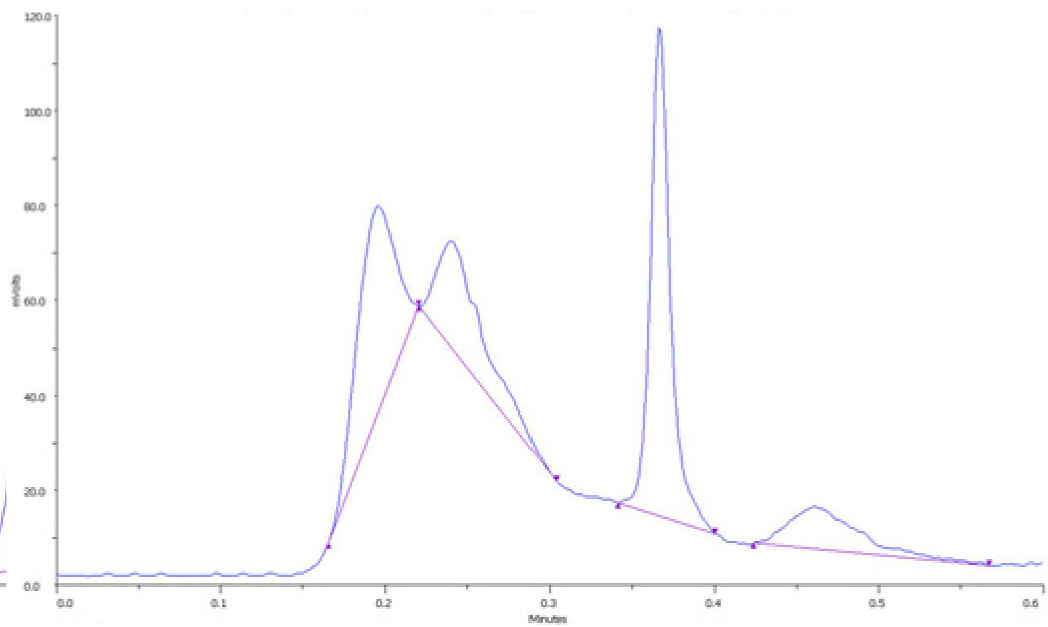
Default Baseline





Horizontal Baseline All Valleys Baseline





Tangent Skim Baseline Next Valley Baseline

Merged Peaks - Baseline Integration Task at Time 0

FRACTION COLLECTION TECHNIQUES

Fraction collection parameters are set in the Fraction Collection Settings task. Four fraction collection modes are available for selection: Slope, Level, Time, or Volume.

Fraction collection is based on the primary channel.

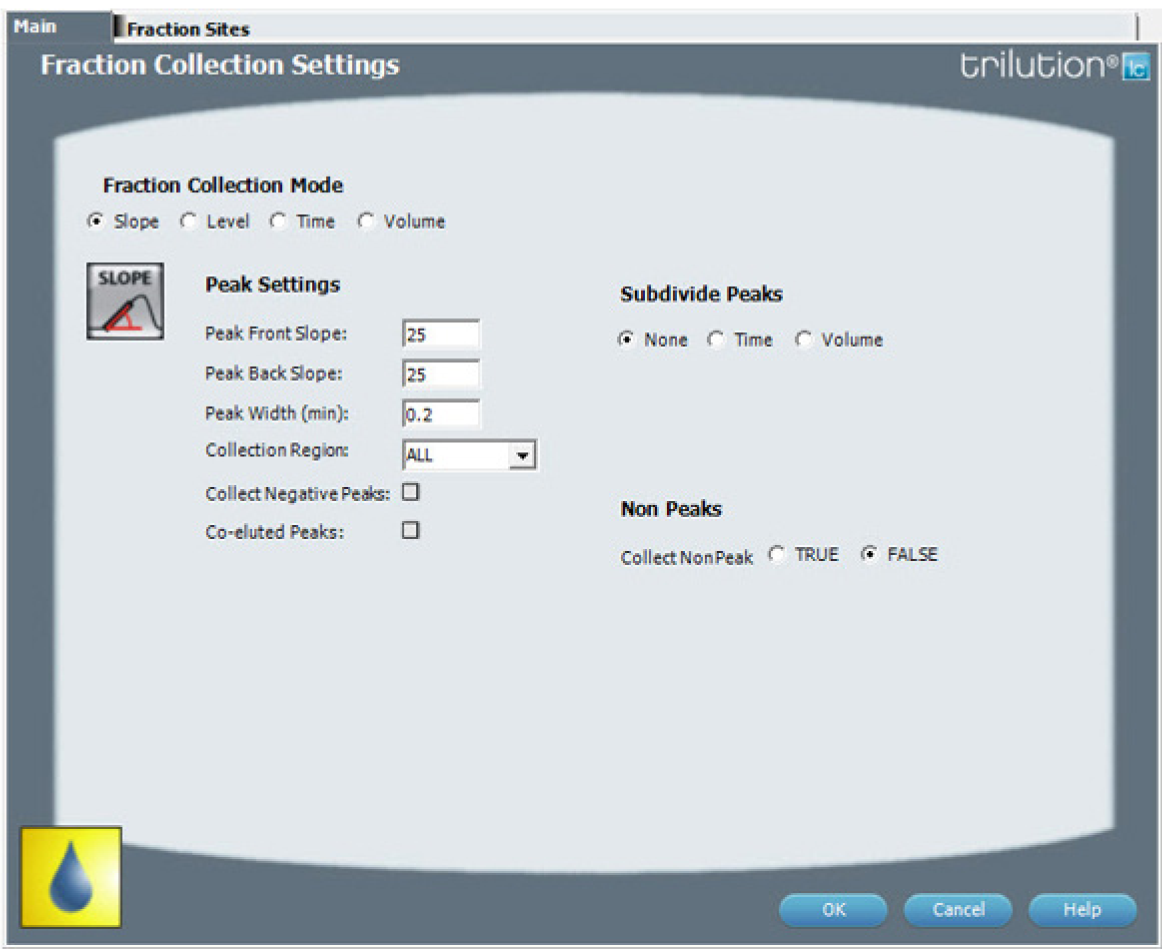
The following examples of how the collection region selection affects collection by slope are provided:

- Collect Heart of Peak
- Collect Front to APEX
- Collect APEX to Tail
- Collect APEX

Additionally, an example is provided for how to Coordinate Integration with Fraction Collection.

How to Collect Fractions by Slope

Fraction collection start (solid, green vertical line) and end lines (dashed, red vertical line) are determined according to the settings in the Fraction Collection Settings task. Select **Slope** for the **Fraction Collection Mode** to collect fractions by slope.



Fraction Collection Settings Task Properties - Slope Selected

Consider the angle of the peak's ascending and descending edge when setting the values for Peak Front Slope and Peak Back Slope. The default value for front and back slopes is 25. If the peak has significant tailing, the Peak Back Slope value should be increased to reduce the amount of the tail that is collected or decreased to increase the amount of the tail that is collected. A smaller Peak Front Slope value will collect smaller, sharper peaks. To reduce the number of small peaks collected, increase the Peak Front Slope value.

The Peak Width setting is the size of the data window that is used to calculate whether the slope condition has been met. The default is 0.2 min. If the trace has a lot of noise, set a higher value to reduce the number of smaller peaks that are collected or set a lower value to increase the number of smaller peaks that are collected.

The Collection Region setting is how much of the peak will be collected. For examples of how the Collection Region setting is used, see Collect Heart of Peak, Collect Front to APEX, Collect APEX to Tail, or Collect APEX.

By default, negative peaks are not collected. To collect negative peaks, select the Collect Negative Peaks check box.

By default, co-eluted peaks are not collected. To collect co-eluted peaks, select the Co-eluted Peaks check box.

By default, the effluent between peaks is not collected. To collect all effluent into tubes, select **TRUE** under **Non Peaks**. Selecting TRUE requires further selection of whether to collect the effluent into tubes by time or volume.

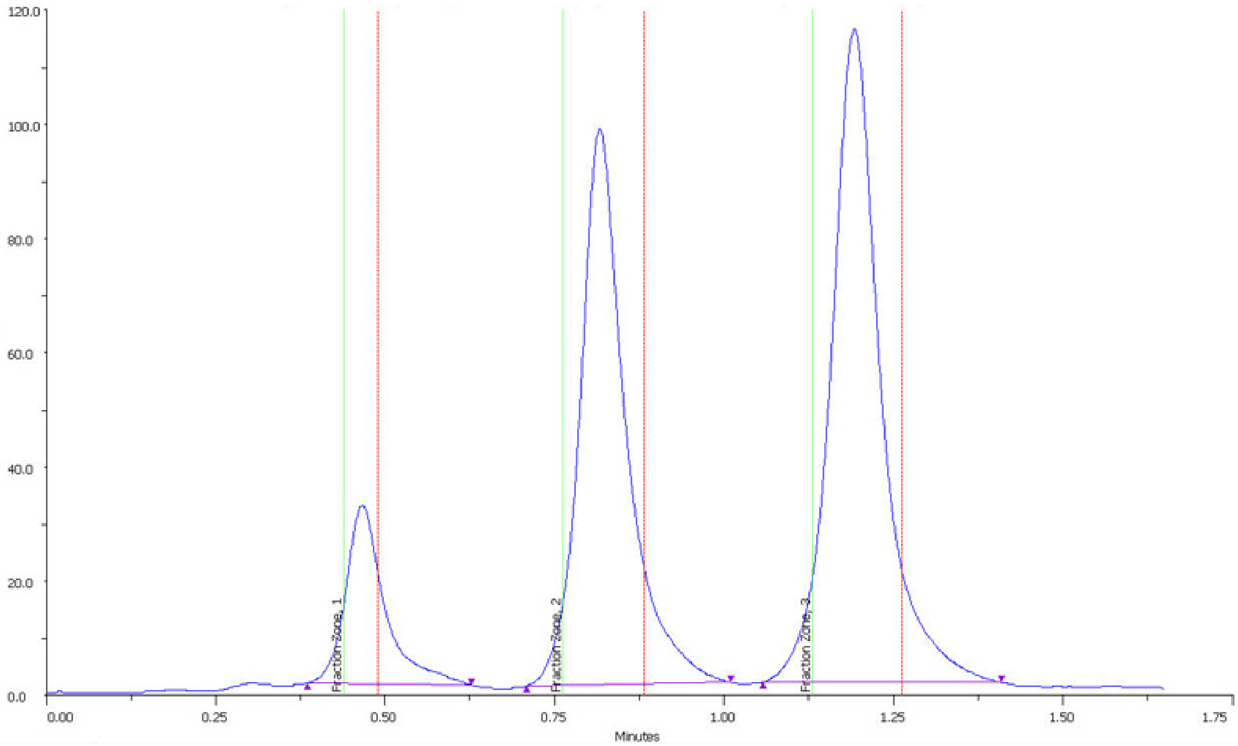
Collect Sub Fractions

When collecting fractions by slope, it is possible to collect peaks within peaks (sub fractions) by time or volume. Sub fractions are collected according to the **Subdivide Peaks** setting in the **Fraction Collection Settings** task. Fraction collection start and end lines are drawn within the peak and at the start and end of the peak.

Collect Heart of Peak

To collect the heart of the peak, set the **Collection Region** to **ALL** (which is default) and increase the **Front Slope** and/or **Back Slope** values. If the peak has significant tailing, then the **Back Slope** value should be increased to reduce the amount of the tail that is collected. If the peak has significant fronting, then the **Front Slope** value should be increased to reduce the amount of fronting that is collected.

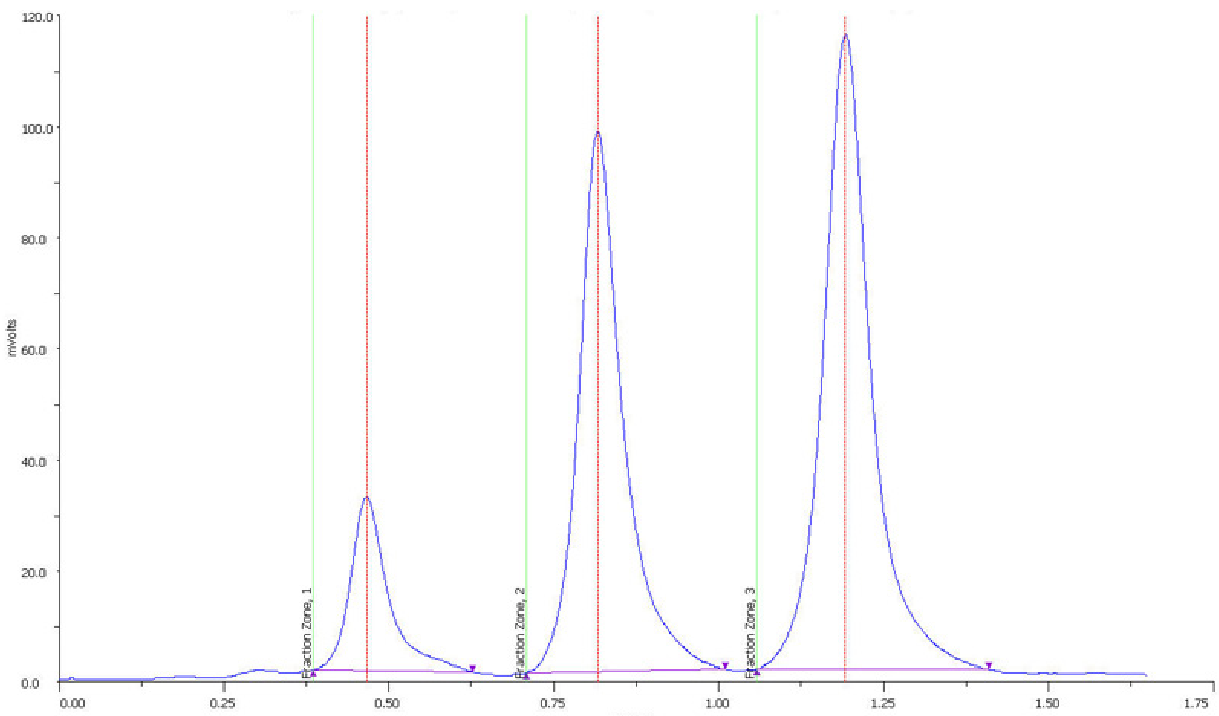
The following example shows the heart of the peak collected and the entire peak integrated.



Collect Front to APEX

To collect from the Front Slope value to the highest point of the peak, set the **Collection Region** to **Front APEX**.

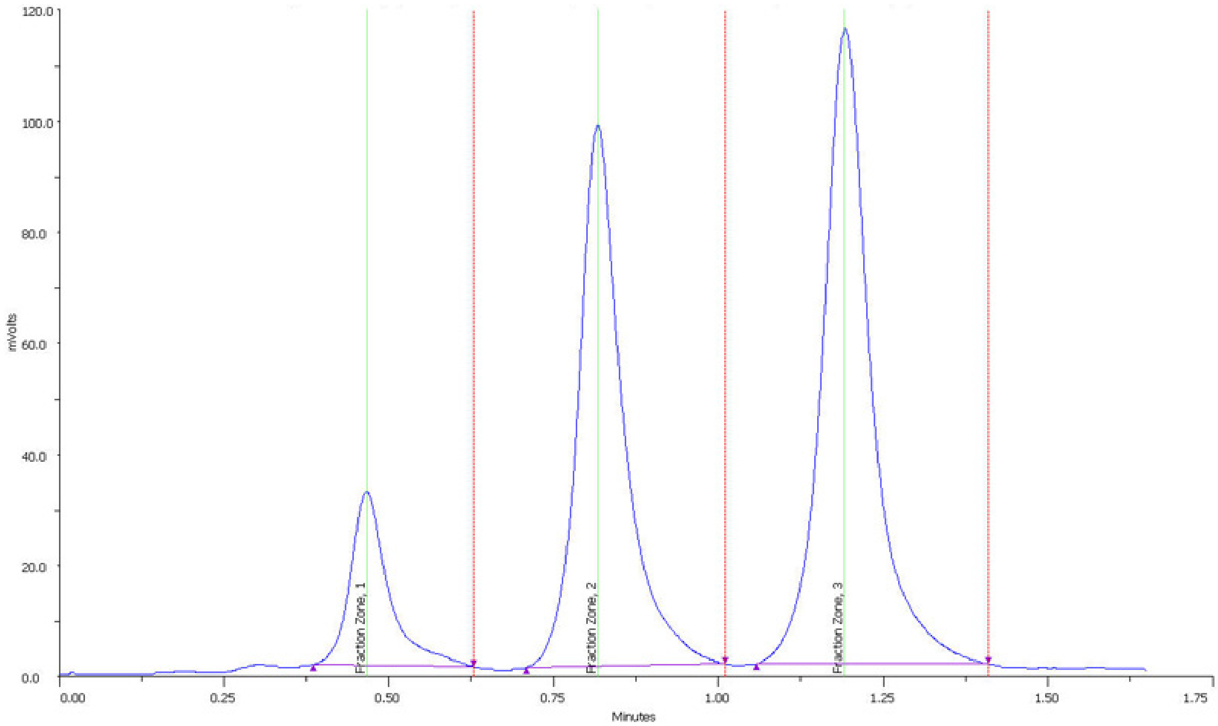
The following example shows the front of the peak to the APEX collected by setting the Collection Region to Front APEX.



Collect APEX to Tail

To collect from the highest point of the peak to the Back Slope value, set the **Collection Region** to **APEX Tail**.

The following example shows the APEX to the tail collected by setting the Collection Region to APEX Tail.



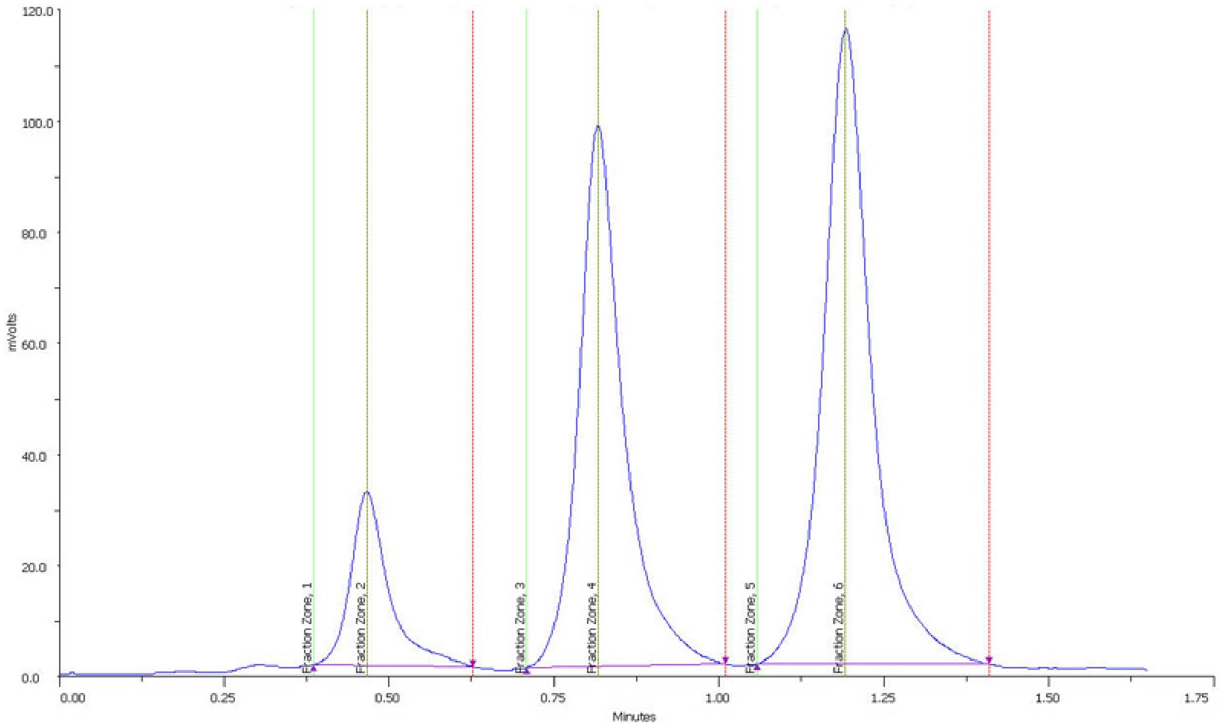
FRACTION COLLECTION TECHNIQUES

FRACTION COLLECTION TECHNIQUES

Collect APEX

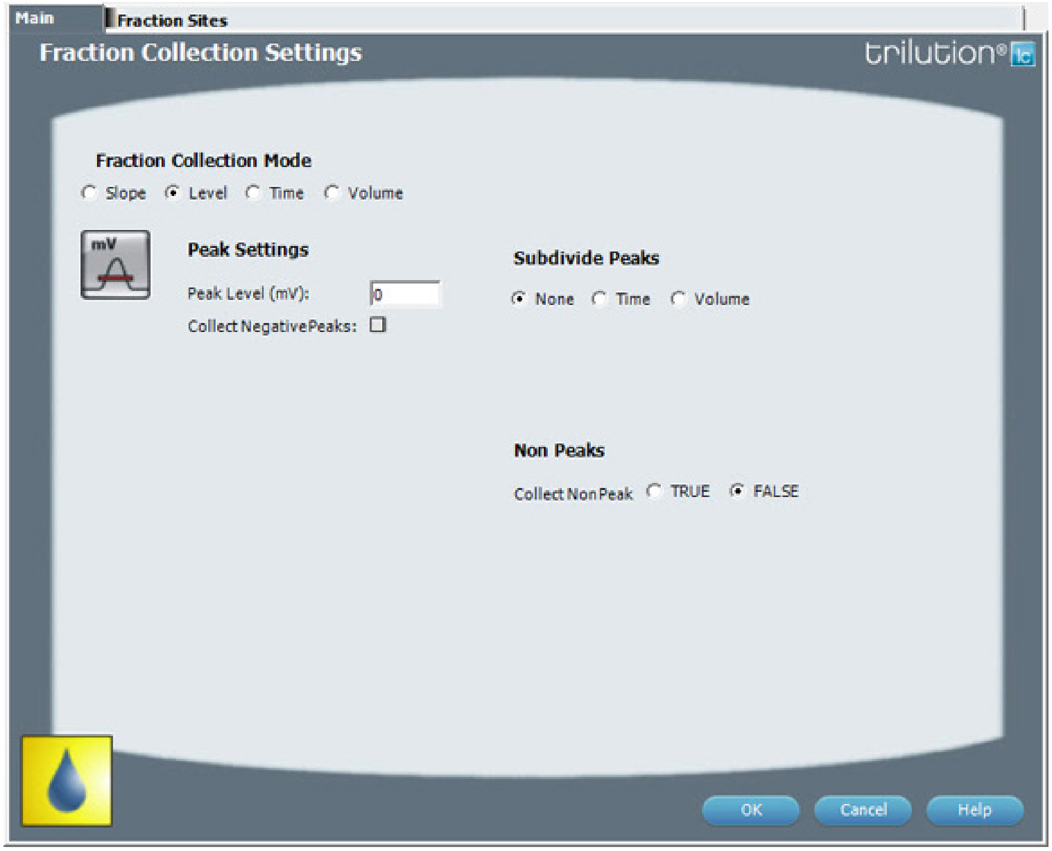
To collect the entire peak, but advance to the next tube at the APEX, set the **Collection Region** to **APEX**.

The following example shows the peak being collected into two tubes with the valve switching and the collector advancing to the next tube at the APEX by setting the Collection Region to APEX.



How to Collect Fractions by Level

Fraction collection start (solid, green vertical line) and end lines (dashed, red vertical line) are determined according to the settings in the Fraction Collection Settings task. Select **Level** for the **Fraction Collection Mode** to collect fractions by level.



Fraction Collection Settings Task Properties - Level Selected

When collecting by level, indicate in the **Peak Level** field the value above which all peaks will be collected.

By default, negative peaks are not collected. To collect negative peaks, select the **Collect Negative Peaks** check box.

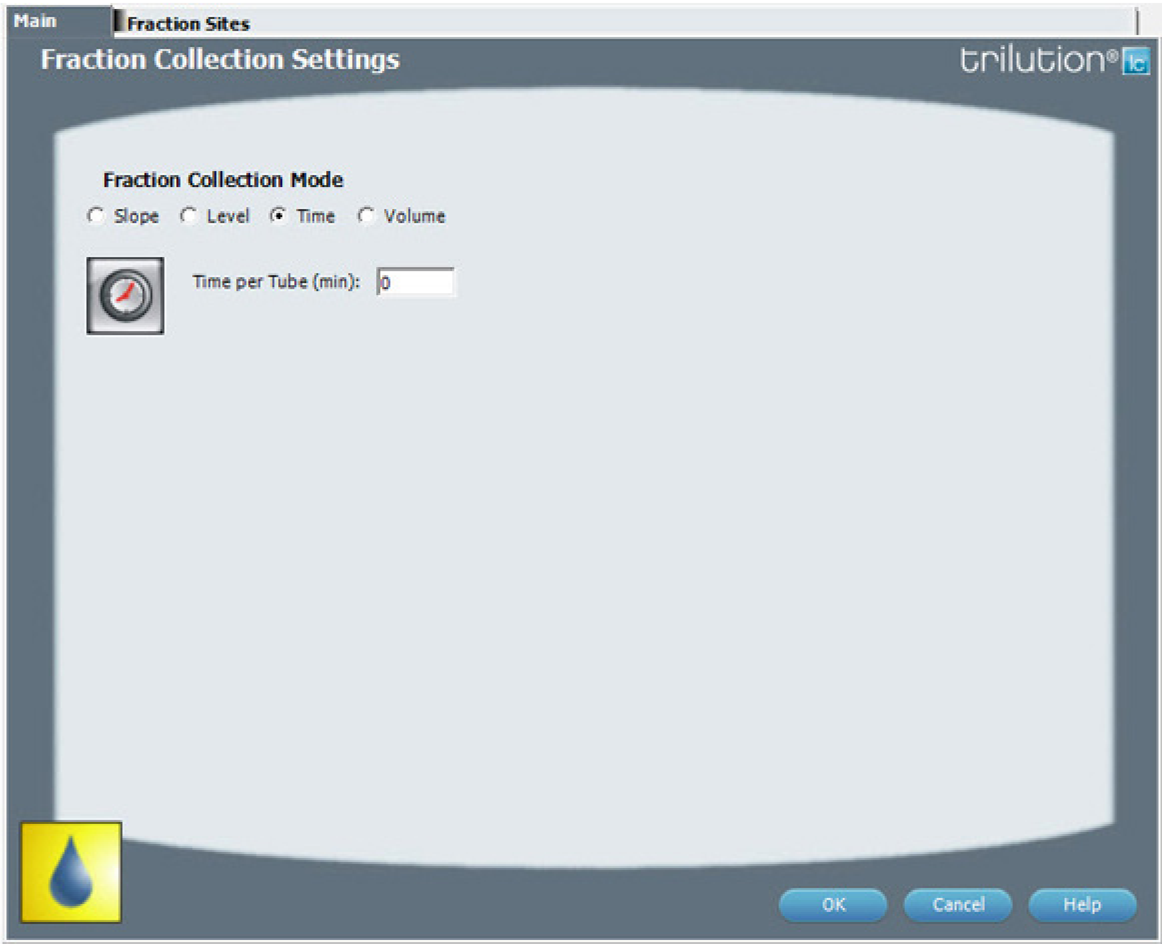
By default, the effluent between peaks is not collected. To collect all effluent into tubes, select **TRUE** under **Non Peaks**. Selecting TRUE requires further selection of whether to collect the effluent into tubes by time or volume.

Collect Sub Fractions

When collecting fractions by level, it is possible to collect peaks within peaks (sub fractions) by time or volume. Sub fractions are collected according to the **Subdivide Peaks** setting in the **Fraction Collection Settings** task. Fraction collection start and end lines are drawn within the peak and at the start and end of the peak.

How to Collect Fractions by Time

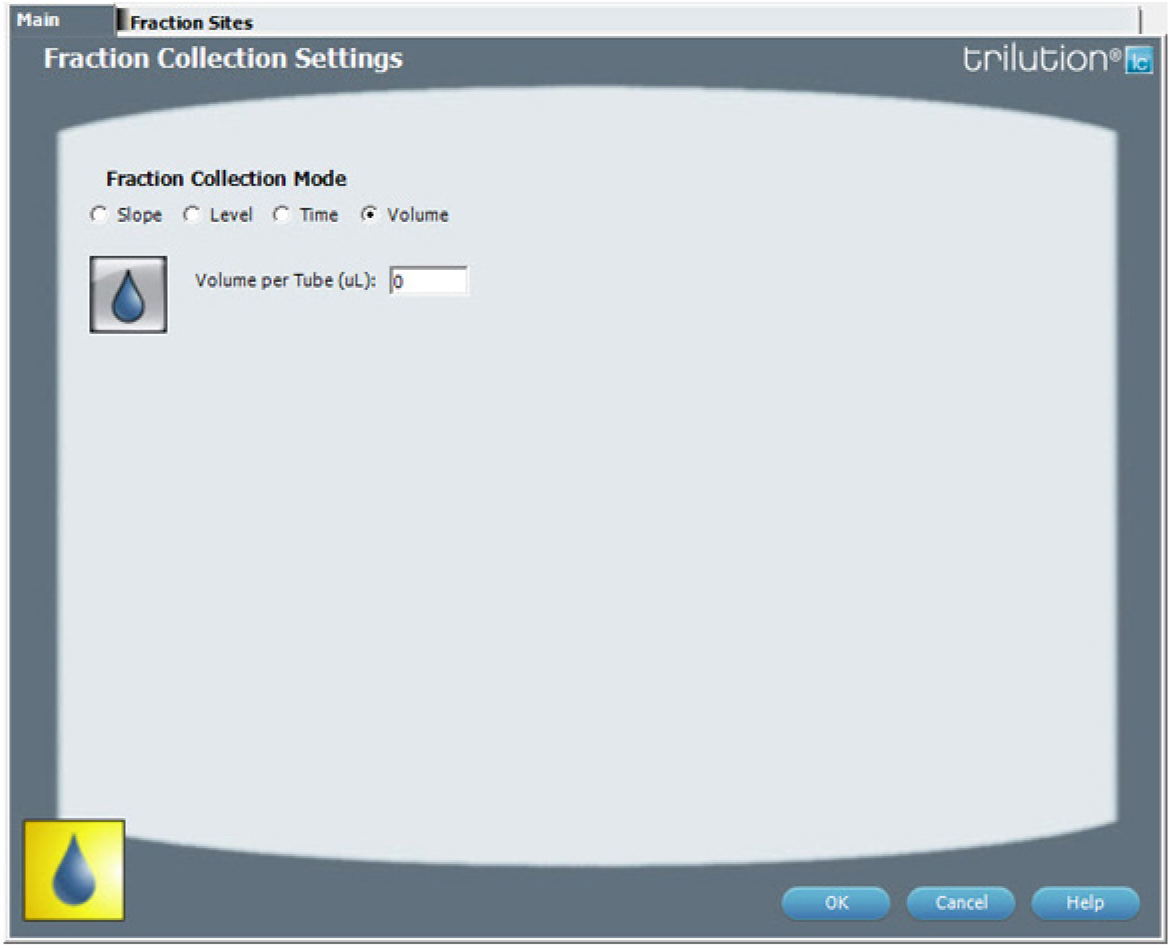
Fraction collection start (solid, green vertical line) and end lines (dashed, red vertical line) are determined according to the settings in the Fraction Collection Settings task. Select **Time** for the **Fraction Collection Mode** to collect fractions by time. Selecting Time requires an entry in the **Time per Tube** field indicating how long to dispense at each tube.



Fraction Collection Settings Properties - Time Selected

How to Collect Fractions by Volume

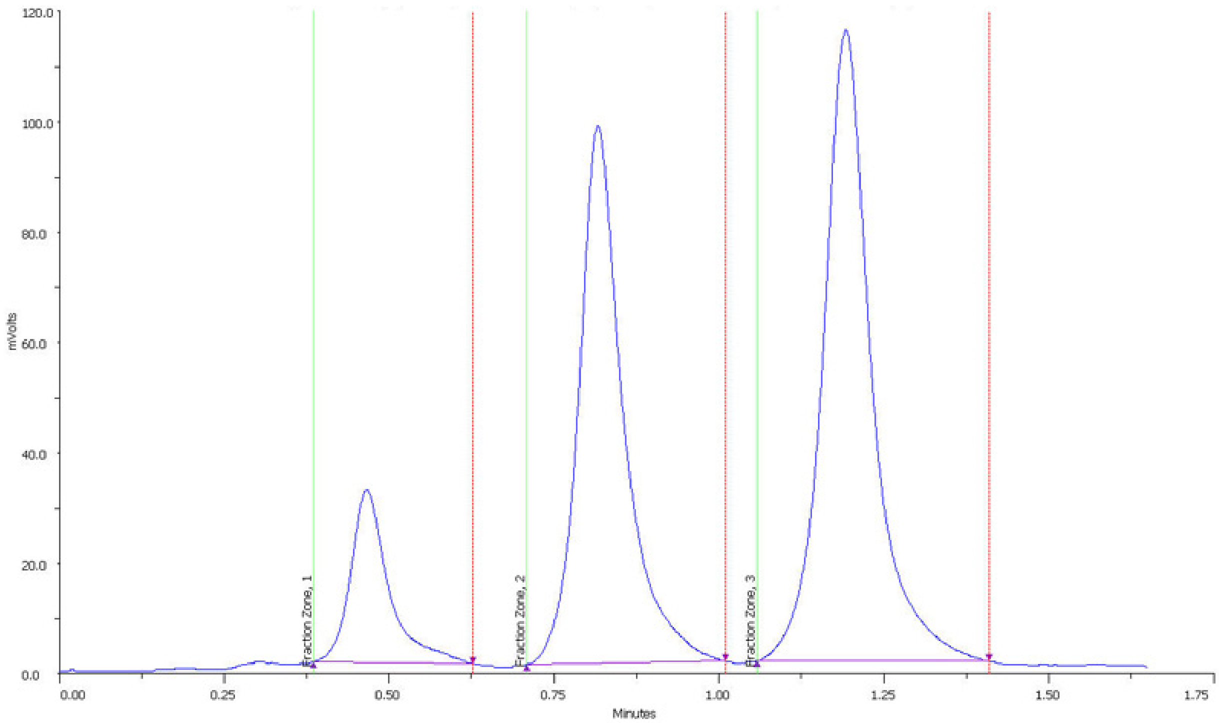
Fraction collection start (solid, green vertical line) and end lines (dashed, red vertical line) are determined according to the settings in the Fraction Collection Settings task. Select **Volume** for the **Fraction Collection Mode** to collect fractions by volume. Selecting Volume requires an entry in the **Volume per Tube** field indicating the maximum volume to be collected into each tube.



Fraction Collection Settings Task Properties - Volume Selected

Coordinate Integration with Fraction Collection

For integration and fraction collection to occur at the same time, use the same **Front Slope** values in the **Fraction Collection Settings** task as in the **Analysis Settings** task and also the same **Back Slope** values in the **Fraction Collection Settings** task as in the **Analysis Settings** task.



LIST OF COMMANDS

The Commands palette lists the pre-defined, read-only commands.

COMMAND NAME			
Aspirate	Mass Spec Pump Down	Rinse Pump (GX)	Start Collection
Aspirate Air Gap	Mass Spec Standby	Run Executable	Start Data Collection
Aspirate Z-Inject	Mass Spec Start Up	Scan Bar Codes	Start File
Autozero Channel	Mass Spec Syringe	Service Heads	Start Scan
Clear Channel	Mass Spec Vent	Set Collection and Travel Depth	Stop Application Run
Dispense	Mass Spec VERITY 1900 Nitrogen Flush	Set DAD Wavelength	Stop Collection
Dispense Air Gap	Mass Spec VERITY 1900 Power Off	Set Dual Ratio Multiplier	Stop Data Collection
Dispense Inject	Mass Spec VERITY 1900 Standby	Set Dual Ratio Threshold	Sync Wait Done
Get Current Held Volume	Mass Spec VERITY 1910 Nitrogen Flush	Set Flow Rate	Synchronize
Get Max Holding Volume	Mass Spec VERITY 1910 Power Off	Set Fraction Site	Turn Lamp Off
GSIOC	Mass Spec VERITY 1910 Standby	Set Injection Valve Position	Turn Lamp On
GSIOC with ID	Mass Spec VERITY 1920 Condition Detector	Set Low Pressure Valve	Turn Lamp Saver Off
Halt Syringes	Mass Spec VERITY 1920 Standby	Set Mass Spec Data Alignment	Turn Lamp Saver On
Home Probes	Mass Spec Vials	Set Mass Spec Mass Ion	UnLock Front Panel
Home Pump	Move Delta	Set Mass Spec Scan	Voltage Off
Home Syringes	Move to Well	Set Mode	Voltage On
Home Valvemate	Move to XY	Set Non Peak Time Per Tube	Wait
Input Contact Status	Move Z	Set Non Peak Volume Per Tube	Wait for Change in Contact State
Input Contact Status with Variable	Output Contact Close	Set Peak Level	Wait for Contact State
LL Seek	Output Contact Open	Set Peak Slope	Wait with Display
LLD	Output Contact Pulse	Set Peak Width	Write to Display
LLD Sensitivity	Output Contact Status	Set Scan Output Time	Zero Analog Offset Voltage
LLD with Variable	Output Contact Status with Variable	Set Sensitivity	
Lock Front Panel	Prime	Set Switching Valve Position	
Log Message	Prompt	Set Time Per Tube	
Mass Spec APCI Settings	Prompt for Input	Set Valvemate Position	
Mass Spec Auto Tune	Read Display	Set Volume Per Tube	
Mass Spec Check Tune	Read Valvemate Position	Set Wavelength	
Mass Spec Diagnostics	Read Valvemate Position with Variable	Solvent Valve	
Mass Spec Diverter Valve	Record Setting	Sound	

LIST OF COMMANDS

Aspirate

This command draws liquid.

Aspirate - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
LH Instrument	The liquid handler that the command will affect.	#Liquid Handler
Syringe ID	Not used.	ALL
Valve Position	The desired position of the dilutor valve. Select Gas, Probe, or Reservoir.	PROBE
Sample Volume	The amount of sample to aspirate. The total of all volumes cannot exceed the syringe or transfer tubing capacity.	100 µL
Extra Volume	An additional volume to the Sample volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Sample Volume.	0 µL
Flow Rate	The speed at which the volume moves into the probe.	1.5 mL/min
Use LLF	Used only when Valve Position = PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated. The Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated.	FALSE

Aspirate Air Gap

This command aspirates the specified volume of air at the specified rate using the specified syringe. This command is used only on pumps to aspirate the specified air volume.

Aspirate Air Gap - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Syringe ID	Not used.	ALL
Air Gap Volume	The quantity of an air gap. The total of all volumes cannot exceed the syringe or transfer tubing capacity.	100 µL
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min

Aspirate Z-Inject

This command draws injection volume into the Z-injection valve.

Aspirate Z-Inject - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE

Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
LH Instrument	The liquid handler that the command will affect.	#Liquid Handler
Syringe ID	Not used.	ALL
Valve Position	The desired position of the dilutor valve. Select **Gas**, **Probe**, or **Reservoir**.	PROBE
Sample Volume	The amount of sample to aspirate. The total of all volumes cannot exceed the syringe or transfer tubing capacity.	100 µL
Extra Volume	An additional volume to the Sample Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Sample Volume.	0 µL
Flow Rate	The speed at which the volume moves into the probe.	1.5 mL/min
Use LLF	Used only when **Valve Position = PROBE** is selected; select **TRUE** and the probe will follow the liquid down as it is aspirated. The **Z Option** must be set to **AUTO CALCULATE** and initial volumes must be set in the **Sample List** to use this option. Select **FALSE** and the probe will not follow the liquid down as it is aspirated.	FALSE

Autozero Channel

This command zeros the output channels of the detector. All buffered values also become zero.

Autozero Channel - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON

Clear Channel

This command clears the FIFO for the selected analog input channel on the 506C System Interface.

Clear Channel - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Contacts

Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Channel	The analog input channel to clear. Valid range is A–D (up to four at once).	A

Dispense

This command dispenses the specified amount sample volume and extra volume.

Dispense - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
LH Instrument	The liquid handler that the command will affect.	#Liquid Handler
Syringe ID	Not used.	ALL
Sample Volume	The amount of sample to dispense. The total of all volumes cannot exceed the syringe or transfer tubing capacity.	100 µL
Extra Volume	An additional volume to the first volume dispensed. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Volume.	0 µL
Flow Rate	The speed at which the volume moves out of the probe.	1.5 mL/min
Use LLF	Used only when **Valve Position = PROBE** is selected; select **TRUE** and the probe will follow the liquid up as it is dispensed. The **Z Option** must be set to **AUTO CALCULATE** and initial volumes must be set in the sample list to use this option. Select **FALSE** and the probe will not follow the liquid up as it is dispensed.	FALSE
Solvent Valve Position	Desired position of the solvent selection valve on the Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

Dispense Air Gap

This command delivers an air gap.

Dispense Air Gap - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Syringe ID	Not used.	ALL
Air Gap Volume	The quantity of an air gap. The total of all volumes cannot exceed the syringe or transfer tubing capacity.	100 µL
Air Gap Flow Rate	The speed at which the **Air Gap Volume** moves out of the probe.	1.5 mL/min
Solvent Valve Position	Desired position of the solvent selection valve on the Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

Dispense Inject

This command delivers injection volume into the injection port.

Dispense Inject - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
LH Instrument	The liquid handler that the command will affect.	#Liquid Handler
Syringe ID	Not used.	ALL
Sample Volume	The amount of sample to dispense. The total of all volumes cannot exceed the syringe or transfer tubing capacity.	100 µL
Extra Volume	An additional volume to the first volume dispensed. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Volume.	0 µL
Flow Rate	The speed at which the volume moves out of the probe.	1.5 mL/min
Use LLF	Used only when **Valve Position = PROBE** is selected; select **TRUE** and the probe will follow the liquid up as it is dispensed. The **Z Option** must be set to **AUTO CALCULATE** and initial volumes must be set in the **Sample List** to use this option. Select **FALSE** and the probe will not follow the liquid up as it is dispensed.	FALSE

Solvent Valve Position	Desired position of the solvent selection valve on the Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

Get Current Held Volume

This command queries the software for the volume held in the syringe (if dilutor is present) or transfer tubing.

Get Current Held Volume - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Read in Variable	Used as a variable for a response coming from the instrument.	0 µL

Get Max Holding Volume

This command queries the software for the syringe capacity (if dilutor is present) or transfer tubing volume.

Get Max Holding Volume - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Read in Variable	Used as a variable for a response coming from the instrument.	0 µL

GSIOC

This command sends a GSIOC command to the specified instrument.

GSIOC - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument	The instrument that the command will affect.	
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Command	The string that sends an instruction to the Instrument.	

Type	The command type: **BUFFERED** or **IMMEDIATE**.	IMMEDIATE
Read in Variable	Used as a variable for a response coming from the instrument.	

GSIOC with ID

This command sends a GSIOC command to an instrument at the specified unit ID.

GSIOC with ID - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Unit ID	The unit ID of the instrument that the command will affect.	
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Command	The string that sends an instruction to the Unit ID.	
Type	The command type: BUFFERED or IMMEDIATE.	IMMEDIATE
Read in Variable	Used as a variable for a response coming from the instrument.	

Halt Syringes

This command stops all syringes. This command is only valid for the VERITY syringe pumps.

Halt Syringes - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Home Probes

The command homes the X/Y/Z on the specified liquid handler.

Home Probes - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Home Pump

This command homes the pump on the GX solvent system.

LIST OF COMMANDS

Home Pump - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Home Syringes

This command homes the external dilutor or the dilutor on a liquid handler.

Home Syringes - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON

Home Valvemate

This command homes the valve position on a VALVEMATE or VALVEMATE II.

Home Valvemate - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Valvemate
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Input Contact Status

This command queries the status of the specified contact input for the specified instrument.

Input Contact Status - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	The input contact being queried. Valid range A–E.	A

Input Contact Status with Variable

This command queries the status of the specified contact input for the specified instrument.

Input Contact Status with Variable - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	The input contact being queried. Valid range A–E.	A
Read in Variable	Used as a variable for a response coming from the instrument.	

LL Seek

This command moves the probe on the specified instrument to the new Target Z position unless the liquid detector stops it first.

LL Seek - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Probe ID	Not used.	ALL
Z Target	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the **Z Option**.	100 mm
Speed	The rate at which the Z-arm moves.	40 mm/sec

Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top**: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	Absolute Value
Touch Off	Not used.	OFF

LLD

This command detects the liquid level for the specified instrument and is used for the following circumstances:

- To move the probe in the Z direction depending on the height of the liquid in the well.
- To move the probe just to the top of the sample. This can be achieved through LLF command also.
- To aspirate only on confirming the presence of the sample in the well.

LLD - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Probe ID	Not used.	ALL

LLD Sensitivity

This command detects liquid when the Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.

LLD Sensitivity - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler

Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Probe ID	Not used.	ALL
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	0

LLD with Variable

This command detects the liquid level for the specified instrument and is used for the following circumstances:

- To move the probe in the Z direction depending on the height of the liquid in the well.
- To move the probe just to the top of the sample. This can be achieved through LLF command also.
- To aspirate only on confirming the presence of the sample in the well.

LLD with Variable - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Probe ID	Not used.	ALL
Read in Variable	Used as a variable for a response coming from the instrument.	

Lock Front Panel

This command inhibits the use of instrument's front panel during a run.

Lock Front Panel - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The Instrument that the command will affect.	#Instrument
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Log Message

This command records a message in the log.

Log Message - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE

Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Message	Enter the text to display in the log.	

Mass Spec APCI Settings

This command sets the voltage for the cylinder lens on the Flexar SQ 300 MS Detector.

Mass Spec APCI Settings- Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Pos Ion Cylinder Lens (V)	Sets the voltage on the cylinder lens for positive ions.	3000
Neg Ion Cylinder Lens (V)	Sets the voltage and the cylinder lens for negative ions.	-2400

Mass Spec Auto Tune

Gilson recommends using the supplied task, instead of the command for this function.

Mass Spec Check Tune

Gilson recommends using the supplied task, instead of the command for this function.

Mass Spec Diagnostics

This command generates a diagnostics report.

Mass Spec Diagnostics - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Auto Save	Saves (**TRUE**) or does not save (**FALSE**) the diagnostics report on the **Tune/Diagnostics** tab in the **Results**.	True

Mass Spec Diverter Valve

This command switches the diverter valve on the Flexar SQ 300 MS Detector.

Mass Spec Diverter Valve - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE

Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Diverter Valve Position	Select position 1 or position 2. Using the suggested plumbing connections, position 1 would be Sample and position 2 would be Tune Mix.	1

Mass Spec Pump Down

This command pumps down the MS Detector.

Mass Spec Pump Down - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Mass Spec Standby

Gilson recommends using the supplied task, instead of the command for this function.

Mass Spec Start Up

Gilson recommends using the supplied task, instead of the command for this function.

Mass Spec Syringe

This command sets the syringe make, size, and flow rate.

Mass Spec Syringe - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Syringe Make and Size	Select the make and size of the installed syringe. The default configuration from the manufacturer includes the Hamilton - Microliter Series Gastight [500 uL] [3.26} syringe.	Hamilton - Microliter Series Gastight [500 uL] [3.26]
Syringe Flow Rate	Set the flow rate for the syringe.	0.01mL/min

Mass Spec Vent

This command vents the MS detector.

Mass Spec Vent - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE

Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Mass Spec VERITY 1900 Nitrogen Flush

This command starts and stops a nitrogen flush, which is required while replacing the spraychip.

Mass Spec VERITY 1900 Nitrogen Flush - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
On	Select **True** to start the nitrogen flush. Select **False** to stop the nitrogen flush.	True

Mass Spec VERITY 1900 Power Off

This command is used to power off the VERITY 1900 MS Detector after placing it in standby and venting it.

Mass Spec VERITY 1900 Power Off - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON

Mass Spec VERITY 1900 Standby

Gilson recommends using the supplied task, VERITY 1900 MS Detector Standby, instead of the command for this function.

Mass Spec VERITY 1910 Nitrogen Flush

This command starts and stops a nitrogen flush, which is required while replacing the spraychip.

Mass Spec VERITY 1900 Nitrogen Flush - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector

Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
On	Select True to start the nitrogen flush. Select False to stop the nitrogen flush.	True

Mass Spec VERITY 1910 Power Off

This command is used to power off the VERITY 1910 MS Detector after placing it in standby and venting it.

Mass Spec VERITY 1900 Power Off - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON

Mass Spec VERITY 1910 Standby

Gilson recommends using the supplied task, VERITY 1900 MS Detector Standby, instead of the command for this function.

Mass Spec VERITY 1920 Condition Detector

Gilson recommends running this command at the time of installation (before running the auto tune) and anytime the VERITY 1920 MS has been idle for an extended period of time.

Mass Spec VERITY 1920 Condition Detector - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Mass Spec VERITY 1920 Standby

Gilson recommends using the supplied task, VERITY 1920 MS Detector Standby, instead of the command for this function.

Mass Spec Vials

On the Flexar SQ 300 MS Detector, this command turns on vial 1 or vial 2 or turns both off and switches the diverter valve to sample.

Mass Spec Vials - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE

Instrument Name	The instrument that the command will affect.	MS Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Vial	Select **1** (left) or **2** (right).	1
State	Select **On** to dispense or **OFF** to stop dispensing.	On

Move Delta

This command moves the arm in the X- and Y-direction as specified. This is used if the probe has to be moved to a position other than the center of the well. This command is used in the following circumstances:

- Used in relatively large diameter wells to move from one position to another position within the well.
- To move to different positions between the wells.

Move Delta - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
X Delta	Specify the required displacement of the arm in the X-direction from the current position of the arm. Positive number moves the arm to the right, from the current position. Negative number moves the arm to the left, from the current position.	100 mm
Y Delta	Specify the required displacement of the arm in the Y-direction from the current position of the arm. Positive number moves the arm towards the front, from the current position. Negative number moves the arm backwards, from the current position.	100 mm
Reference Probe	Not used.	ALL

Move to Well

This command moves the Z-arm so that the probe will move to the specified well in the specified zone.

Move to Well - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Probe ID	Not used.	ALL
Zone Name	The name of the zone to move to.	Source Zone
Well Number	This is the number of the well in the zone.	1

Move Option	Not used.	Center

Move to XY

This command moves the arm to an absolute X value and an absolute Y value.

Move to XY - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
X Target	Specify the absolute X value that you want the arm to move to.	100 mm
Y Target	Specify the absolute Y value that you want the arm to move to.	100 mm
Reference Probe	Not used.	ALL

Move Z

This command moves the probe on the specified instrument in the Z direction.

Move Z - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Probe ID	Not used.	ALL
Z Target	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the **Z Option**.	100 mm
Speed	The rate at which the Z-arm moves.	123 mm/sec
Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: Auto Calculate: Places probe into well and at the liquid level using initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Offset. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; accepts only positive Z Offset values to move up from the bottom. Top: Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. Tube Top: Moves the probe to the top of the well as defined by the bed layout; accepts a positive (+) or negative (-) value for the Z Offset.	Absolute Value
Touch Off	Not used.	OFF

Output Contact Close

This command closes and powers on the specified output contact on a specified instrument.

Output Contact Close - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected. Valid range is 1–8.	1

Output Contact Open

This command opens and powers off the specified output contact on a specified instrument.

Output Contact Open - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected. Valid range is 1–8.	1

Output Contact Pulse

This command pulses the specified output contact on a specified instrument.

Output Contact Pulse - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected.	1
Duration	Length of time the program will wait between each output contact state change.	0.016 min

Output Contact Status

This command queries the status of the specified contact output for the specified instrument.

Output Contact Status - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	The output contact being queried. Valid range is 1–8.	1

Output Contact Status with Variable

This command queries the status of the specified contact output for the specified instrument.

Output Contact Status with Variable - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	The output contact being queried. Valid range is 1–8.	1
Read in Variable	Used as a variable for a response coming from the instrument.	

Prime

This command primes the syringe pump or transfer tubing with reservoir solvent.

Prime - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Flow Rate	The speed at which the volume moves into the probe.	1.5 mL/min
Number of Cycles	The number of times to repeat aspirating and dispensing.	1
Solvent Valve Position	Desired position of the solvent selection valve on the Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

Prompt

This command displays a prompt dialog with the selected message.

Prompt - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Message	Enter the text to display in the message box.	

Prompt for Input

This command is used in an expression. When the application is run, a dialog appears with an input field and an **OK** button. How this input is used is dependent on the expressions used.

Prompt for Input - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Message	Enter the text to display in the message box.	
Read in Variable	Used as a variable for a response coming from the instrument.	

Read Display

This command reads the message on the front panel display of the selected instrument and then records it in the **Analysis Report**.

Read Display - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Line Number	For two-line displays, indicate the line for which to read and record the message.	1
Read in Variable	Used as a variable for a response coming from the instrument.	

Read Valvemate Position

This command reads the position of the switching valve and then records it in the log file.

Read Valvemate Position - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Valvemate
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Read Valvemate Position with Variable

This command reads the position of the switching valve and then records it in the log file.

Read Valvemate Position with Variable - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Valvemate
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Read in Variable	Used as a variable for a response coming from the instrument.	

Record Setting

This command queries the value of the selected setting and then records it in the analysis report.

Record Setting Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Setting	The options for settings which will be queried for a value are: Single WL, Single Sens. 1, Single Sens. 2, Single Peak Width, Dual WL 1, Dual WL 2, Dual Sens. 1, Dual Sens. 2, Dual Peak Width, Dual Ratio Multi., Dual Ratio Thres., Scan WL, Scan WL 1, Scan WL 2, Scan Sens. 1, Scan Sens. 2, Scan Sens. 3, ScanPeakWidth, ScanOut Time, Conc.Factor, Event Channel(s), AutoRange Channel(s), AutoRange Mult., GSIOC UnitID, Operation Mode, Lamp Saver, UV Lamp Alarm, Visible Lamp Alarm, Channel 1 Scale, Channel 1 OffSet, Channel 2 Scale, Channel 2 OffSet, Channel 3 Scale, and Channel 3 OffSet.	Single WL

Rinse Pump (GX)

Turns the specified rinse pump on (HIGH or LOW) or turns it off.

Rinse Pump (GX) - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

RINSE PUMP (GX) - PROPERTIES CONTINUED ON PAGE 667

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Rinse Pump ID	The rinse pump that will be used for the flowing outside rinse. Select **1** if the rinse pump is wired to Output 1 and 24V Output 1 or select **2** if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Speed	Select **HIGH**, **LOW**, or **OFF**.	OFF

Run Executable

This command invokes an external application.

Run Executable - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Path and Name	File path to which the **Command Line Parameters** are sent.	
Command Line Parameters	The information sent to the program located at the **Path and Name**.	

Scan Bar Codes

This command scans the racks on the locator plate of the Liquid Handler specified (currently only available for the GX-281 Liquid Handler) for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.

Scan Bar Codes - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Service Heads

This command is used when replacing or servicing the pump heads.

Service Heads Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Mount Heads	Select **TRUE** to mount the heads. Select **FALSE** move the pump head pistons to the dismount position.	FALSE

Set Collection and Travel Depth

This command customizes probe (used as a dispense needle) movement during fraction collection.

Set Collection and Travel Depth Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Collection Depth	The probe height used when dispensing into fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance or -1, where -1 is equal to the Z Clamp Height.	125 mm
Travel Depth	The probe height used when moving between fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance or -1, where -1 is equal to the Z Clamp Height.	125 mm

Set DAD Wavelength

This command sets the DAD wavelengths to be monitored based on the Channel selected for the selected Detector.

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Channel	The channel for which wavelength and bandwidth properties will be set.	0
Wavelength	The wavelength at which chromatogram data will be extracted and displayed on-screen during the run. **Range for 171 Diode Array Detector**: [Wavelength - (0.5 x WavelengthBW)] > 186 and [Wavelength + (0.5 x WavelengthBW)] < 723 **Range for the 172 Diode Array Detector**: [Wavelength - (0.5 x WavelengthBW)] > 186 and [Wavelength + (0.5 x WavelengthBW)] < 612	0 nm
WavelengthBW	The number of wavelengths that TRILUTION will use in the chromatogram calculation for the wavelength. Optimizing the bandwidth improves the signal-to-noise ratio to obtain the optimum signal for peak detection. (Range 1–15 nm, range dependent on setting for Wavelength)	0 nm

SET DAD WAVELENGTH - PROPERTIES CONTINUED ON PAGE 670

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Reference	The reference is used to correct for background noise and instabilities in the detector. Choose a reference that is close to the wavelength and in a region of non-absorbance. **Range for the 171 Diode Array Detector:** [Reference - (0.5 x ReferenceBW)] > 186 and [Reference + (0.5 x ReferenceBW)] < 723 **Range for the 172 Diode Array Detector:** [Reference - (0.5 x ReferenceBW)] > 186 and [Reference + (0.5 x ReferenceBW)] < 612	0 nm
ReferenceBW	The ReferenceBW sets the number of wavelengths that TRILUTION will use in the chromatogram calculation for the reference. Optimizing the bandwidth improves the signal-to-noise ratio to obtain the optimum signal for peak detection. (Range 1–50 nm, range dependent on setting for Reference)	0 nm

Set Dual Ratio Multiplier

This command sets the ratio output display on channel 3.

Set Dual Ratio Multiplier Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Ratio	Use this parameter to enhance the ratio output display on channel 3. (The ratio output is automatically displayed at 50% full scale. This allows both positive and negative ratios within a trace to be presented.) Valid range is 0.01–99.99	0

Set Dual Ratio Threshold

This command sets the ratio threshold. This command is used to prevent the detector from interpreting a noisy baseline as a series of peaks by setting a threshold higher than the highest baseline noise level.

Set Dual Ratio Threshold Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector

SET DUAL RATIO THRESHOLD PROPERTIES CONTINUED ON PAGE 671

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Ratio	In dual wavelength mode, output channel 3 shows a ratio of the absorbance at wavelength 1 to the absorbance at wavelength 2. The ratio can help determine peak purity. The absorbance ratio is displayed only when the absorbance at both wavelengths exceeds a specified threshold. Positive ratios indicate that the peak at wavelength 1 is larger than the peak at wavelength 2. Negative ratios indicate that the peak at wavelength 2 is larger than the peak at wavelength 1. Set the ratio threshold (in AU) higher than the highest baseline noise level. This prevents the detector from interpreting a noisy baseline as a series of peaks. In general, the higher the baseline noise, the larger the ratio threshold setting. Valid range is 0.00001–2.00000.	0

Set Flow Rate

This command starts the specified pump pumping at the specified flow rate.

Set Flow Rate Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Flow Rate	The total flow rate from the specified pump.	0 mL/min

Set Fraction Site

This command identifies where fraction collection will begin for an injected sample.

Set Fraction Site Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Fraction Instrument	The fraction collector that the command will affect.	215SingleProbe1
Zone	The zone in which fractions are collected.	Zone
Well	Enter the well number in the Zone in which collection will begin. Enter 0 for continuous collection (fractions will always be collected in the next available tube).	1

Set Injection Valve Position

This command sets the injection valve position on the Injector to either LOAD or INJECT.

Set Injection Valve Position - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Injector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Injection Valve Position	Select from **LOAD** or **INJECT**.	LOAD
Valve ID	Valid range 1–8.	1

Set Low Pressure Valve

This command switches the low pressure valve to COLLECT for the duration specified.

Set Low Pressure Valve Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Duration	Length of time the low pressure valve will remain in the COLLECT position.	0.03 min

Set Mass Spec Data Alignment

For use in Gilson-supplied tasks only.

Set Mass Spec Mass Ion

For use in Gilson-supplied tasks only.

Set Mass Spec Scan

For use in Gilson-supplied tasks only.

Set Mode

This command sets the mode to **Single**, **Dual**, or **Scan** modes.

Set Mode Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Mode	Select from **DUAL**, **SCAN**, or **SINGLE**.	SINGLE

Set Non Peak Time Per Tube

This command sets parameters for collecting non-peaks by time.

Set Non Peak Time Per Tube Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Time	Enter the time to dispense at each tube.	0.16 min

Set Non Peak Volume Per Tube

This command sets parameters for collecting non-peaks by volume.

Set Non Peak Volume Per Tube Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Volume	Enter the maximum volume to be collected into each tube.	100 µL

Set Peak Level

This command sets the parameters for fraction collection by level.

Set Peak Level Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Level	The mV level above which all peaks are collected. This value is especially useful if the detector signal should go off-scale during collection.	0 mV
Collect Positive Peaks	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peaks	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peaks	Indicates if all non peaks should be collected into tubes (TRUE) or not (FALSE)	FALSE

Set Peak Slope

This command sets the parameters for peak slope for fraction collection.

Set Peak Slope Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Front Slope	Consider the angle of the ascending edge of the peak when setting the value for Front Slope. A smaller Front Slope value will collect smaller, sharper peaks. To reduce the number of small peaks collected, increase the Front Slope value.	15

SET PEAK SLOPE PROPERTIES CONTINUED ON PAGE 674

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Back Slope	Consider the angle of the descending edge of the peak when setting the value for Back Slope. If the peak has significant tailing, the Back Slope value should be increased to reduce the amount of the tail that is collected or decreased to increase the amount of the tail that is collected.	15
Peak Width	The size of the data window that is used to calculate whether the slope condition has been met. If the trace has a lot of noise, set a higher value to reduce the number of smaller peaks that are collected or set a lower value to increase the number of smaller peaks that are collected.	0.003
Collect Positive Peaks	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peaks	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peaks	Indicates if all non peaks should be collected into tubes (TRUE) or not (FALSE)	FALSE
Co-eluted Peaks	Turns on (TRUE) or off (FALSE) collection of co-eluted peaks	FALSE
Collection Region	Indicate whether the front of the slope to the apex (Front APEX), the apex to the tail (APEX Tail), or the entire peak (ALL) should be collected. To collect the entire peak, but advance to the next well at the apex, select APEX.	ALL

Set Peak Width

This command sets the **Peak Width** and **Mode** on the selected **Detector**.

Set Peak Width Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Mode	Select from **DUAL**, **SCAN**, or **SINGLE**.	SINGLE
Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds for **SINGLE** or **SCAN** mode or 4–99 for **DUAL** mode.	0

Set Scan Output Time

This command sets the time it takes chart recorder to trace a wavelength scan on strip chart paper.

Set Scan Output Time Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector

SET SCAN OUTPUT TIME PROPERTIES CONTINUED ON PAGE 675

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Scan Out Time	Time it takes chart recorder to trace a wavelength scan on strip chart paper (does not affect time to scan a peak). Valid range is 0.1–20 min.	0 min

Set Sensitivity

This command sets the sensitivities for monitoring a sample on a separate output channels on the selected Detector.

Set Sensitivity Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Mode	Select from **DUAL**, **SCAN**, or **SINGLE**.	SINGLE
Sensitivity 1	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Sensitivity 2	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Sensitivity 3	Only used when SCAN mode is selected; the sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0

Set Switching Valve Position

This command sets the switching valve position on the 233 XL Sample Injector to either LOAD or INJECT.

Set Switching Valve Position Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The name of the 233 XL Sample Injector that the command will affect.	#Injector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Valve	Select from **LOAD** or **INJECT**.	LOAD

Set Time Per Tube

This command sets parameters for collecting peaks by time.

Set Time Per Tube Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Time	Enter the time to dispense at each tube.	0.16 min

Set Valvemate Position

This command sets the position of the switching valve.

Set Valvemate Position - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The name used to identify the instrument that the Command will affect. It must be typed exactly as it is in the Configuration.	#Valvemate
Position	Desired position of the valve on the VALVEMATE or VALVEMATE II. Note: When using a 2-position valve on a VALVEMATE, choose 1 for position 0 or 2 for position 1.	1
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Set Volume Per Tube

This command sets parameters for collecting peaks by volume.

Set Volume Per Tube Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Volume	Enter the maximum volume to be collected into each tube.	100 µL

Set Wavelength

This command sets the wavelengths to be monitored based on the **Mode** selected for the selected **Detector**.

Set Wavelength Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	#Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Mode	Select from **DUAL**, **SCAN**, or **SINGLE**.	SINGLE
Wavelength 1	The monitor wavelength when **DUAL** or **SINGLE** mode is selected. Valid range is 190–700 nm.	0 nm

SET WAVELENGTH PROPERTIES CONTINUED ON PAGE 677

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Wavelength 2	The monitor wavelength for output channel 2 when **DUAL** mode is selected. Valid range is 190–700 nm.	0 nm
Wavelength 3	Only used when **SCAN** mode is selected; the sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0 nm

Solvent Valve

This command changes the position of the solvent selection valve on a pump (if installed) or on the GX Prep Solvent System.

Solvent Valve Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Pump
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Solvent Valve Position	Desired position of the solvent selection valve on the pump or GX Prep Solvent System. Valid range is 1–6. The position designated for waste on the GX Prep Solvent System cannot be used for a solvent.	1

Sound

This command causes the selected instrument to beep the duration.

Sound - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Instrument
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Duration	Length of time the beep will sound.	0.016 min

Start Collection

This command tells the software to begin collecting fractions. This command has no properties to set.

Start Data Collection

This command tells the software to begin collecting data. This command has no properties to set.

Start File

This command runs a file that was created in the detector's software.

Start File Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
File Number	The number that corresponds to the detector file to run. Valid range is 0–9.	1

Start Scan

This command initiates the scan between **Wavelength 1** and **Wavelength 2**.

Start Scan - Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Stop Application Run

This command forces the **Application Run** to stop.

Stop Application Run - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Message	Enter the text to display in the message box.	

Stop Collection

This command tells the software to stop collecting fractions. This command has no properties to set.

Stop Data Collection

This command tells the software to stop collecting data. This command has no properties to set.

Sync Wait Done

This command is used to coordinate a step in a task with a time in a method.

Synchronize

This command is used to coordinate tasks in a method.

Synchronize - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Instrument
Type	The command type.	

Turn Lamp Off

This command turns off power to the lamps while maintaining power to the Detector.

Turn Lamp Off Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	Detector
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON

Turn Lamp On

This command turns the UV and visible lamps on for the specified Detector.

Turn Lamp On Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Turn Lamp Saver Off

This command toggles the lamp saver option off.

Turn Lamp Saver Off Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Turn Lamp Saver On

This command toggles the lamp saver option on. When the lamp saver option is on, the detector automatically turns off a lamp if it is not being used by the detector.

Turn Lamp Saver On Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The detector that the command will affect.	Detector
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

UnLock Front Panel

This command enables use of instrument's front panel during a run.

UnLock Front Panel - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The Instrument that the command will affect.	#Instrument
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON

Voltage Off

This command opens and powers off the output contact on a specified liquid handler.

Voltage Off - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	Enter the number that corresponds to the output contact to act on for the liquid handler selected.	1

Voltage On

This command opens and powers on the output contact on a specified liquid handler.

Voltage On - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler

VOLTAGE ON - PROPERTIES CONTINUED ON PAGE 681

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	Enter the number that corresponds to the output contact to act on for the liquid handler selected.	1

Wait

This command waits a specified length of time.

Wait - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Wait Time	Time the program waits before starting the next command.	0.016 min
Alarm	Select **TRUE** and the computer will beep until the display message is detected. Select **FALSE** to inhibit beeping while waiting for the display message from the injector program.	FALSE
Message	Enter the text to display in the message box.	

Wait for Change in Contact State

This command initiates a wait in the method until a contact state change is detected of the specified input contact on the specified instrument.

Wait for Change in Contact State - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	The input contact being queried. Valid range A–E.	A
Alarm	Select **TRUE** and the computer will beep until the display message is detected. Select **FALSE** to inhibit beeping while waiting for the display message from the injector program.	FALSE
Message	Enter the text to display in the message box.	

Wait for Contact State

This command initiates a wait in the method until a specified contact state change is detected of the specified input contact on the specified instrument.

Wait for Contact State - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Contact ID	The input contact being queried. Valid range A–E.	A
Alarm	Select **TRUE** and the computer will beep until the display message is detected. Select **FALSE** to inhibit beeping while waiting for the display message from the injector program.	FALSE
Message	Enter the text to display in the message box.	
State	Select **ON** and the system will wait for the contact to be in a closed state. Select **OFF** and the system will wait for the contact to be in an open state.	

Wait with Display

For synchronization between injector program and TRILUTION. During the run, TRILUTION enters a wait state until the indicated message appears. When the message appears, TRILUTION continues the run.

Wait with Display - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The Instrument that the command will affect.	#Instrument
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Message	Enter the text to wait for.	
Line Number	For two-line displays, indicates where the message will be displayed.	1
Alarm	Select **TRUE** and the computer will beep until the display message is detected. Select **FALSE** to inhibit beeping while waiting for the display message from the injector program.	FALSE

Write to Display

This command displays a message in the front panel display of the selected instrument.

Write to Display - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Liquid Handler

WRITE TO DISPLAY - PROPERTIES CONTINUED ON PAGE 683

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Synchronize	Select **ON** and commands will be executed only after the previous command issued completes. Select **OFF** and commands will be executed at the same time.	ON
Message	Enter the text to display.	Message
Line Number	For two-line displays, indicate the line on which to display the message.	1

Zero Analog Offset Voltage

This command sets the selected 506C System Interface channel's trace to 0 mV.

Zero Analog Offset Voltage Command Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Instrument Name	The 506C System Interface that the command will affect.	Contacts
Synchronize	Select ON and commands will be executed only after the previous command issued completes. Select OFF and commands will be executed at the same time.	ON
Channel	The analog input channel to zero. Valid range is A–D (up to four at once).	A

TASK BUILDER

A task is a grouping of simple actions to be performed on instruments in a system. A task is a combination of commands and operators, and it serves as a building block for a method.

Create, modify, delete, export, or import tasks in the **Task Builder**.

The drag-and-drop feature provides the ability to create tasks easily by dragging the commands, tasks, variables, and operators from the side palette and dropping them into the workspace.

Multiple tasks can be opened at a time.

Access the **Task Builder** by:

- clicking **Task** from the **Liquid Chromatography** menu.
- right-clicking on a control task in a method, and then selecting **Open**.

Key concepts to understand about the **Task Builder** are:

- How to Create a Task
- How to Export Tasks
- How to Import Tasks

Task Builder Window

The **Task Builder** is a graphical user interface used to build a task.

The **Task Builder** window includes:

- Tasks Palette
- Operators Palette
- Commands Palette
- Workspace
- Info Window
- Action Buttons

Use the **Task Builder** to:

- Create new tasks; refer to How to Create a Task.
- Modify existing tasks; refer to Modify a Task.
- Permanently delete tasks; refer to Delete a Task.
- Export tasks; refer to How to Export Tasks.
- Import tasks; refer to How to Import Tasks.

Tasks Palette

The Tasks palette lists the saved (custom) tasks and pre-defined, Gilson-supplied tasks.

For descriptions of Gilson-supplied tasks, refer to List of Tasks.

Operators Palette

The Operators palette lists the operators, variables, and expressions.

For more information about variables, refer to Working with Variables.

For more information about operators and expressions, refer to Operators.

Commands Palette

Commands are listed in the Commands palette. Commands are used to build tasks. Commands cannot be created, modified, or deleted. For a description of each command and its command properties, refer to List of Commands.

Action Buttons

The following action buttons are in the lower left corner of the **Task Builder**.

ACTION BUTTON	DESCRIPTION
New	Creates a new task. For more information, refer to How to Create a Task.
Open	Opens an existing task. For more information, refer to View a Task.
Save	Saves an existing task to the same name. For more information, refer to Save a Task.
Save As	Saves a new task or saves an existing task to a new name. Specify the task type. Optionally, type a short and/or long description for the task.
Modify	Allows for modifying the short and/or long description and/or task type for the task or selecting a custom icon.
Delete	Deletes the open task or all versions of the task. For more information, refer to Delete a Task.
Export	Exports the task to a specified location as a .LCTE file. For more information, refer to How to Export Tasks.
Refresh	Reloads the Tasks palette with any new tasks created.
Import	Imports a .LCTE file, lists the task in the Tasks palette, and replaces it in the method. For more information, refer to How to Import Tasks.
Close	Closes the open task while leaving the Task Builder open.
Close All	Closes all open tasks while leaving the Task Builder open.

Info Window

The info window lists information about the open task (if applicable) and the name of the current user.

Workspace

The workspace is used to build new or modify existing tasks. The left panel provides the sequence. The right panel shows the operator container for the selected operator that can contain commands, tasks, or other operators.

Commands are represented by the following icon: .

Toolbar

Click an icon to perform the action described below.

ICON	LABEL	DESCRIPTION
	Undo	Reverses the last action when the last action was to add or delete a task, command, or operator.
	Redo	Repeats the last action prior to an undo.
	Variable List	Lists the available variables for the task. Click to view the list of variables used in the task. For more information about variables, refer to Working with Variables.
	Back	Provides the ability to step through nested commands, tasks, and operators in Normal view.
	Help	Displays the on-line help information.

Right-click Menu

COMMAND

Right-click on a command icon in the workspace to display the following menu options:

MENU	DESCRIPTION
Cut	Cuts the command for deleting or pasting in a new location in the workspace, in an operator or expression, or in another task.
Copy	Copies the command to duplicate in a new location in the workspace, in an operator or expression, or in another task.
Paste	Places a cut or copied command in the workspace, in an operator or expression, or in another task.
Delete	Removes the command from the workspace.
Line Break	A toggle for moving the selected element after the selected element to the next line below the selected element.
Properties	Opens the command property page for the selected command.

TASK

Right-click on a task icon to display the following menu options:

MENU	DESCRIPTION
Cut	Cuts the task for deleting or pasting in a new location in the workspace, in an operator or expression, or in another task.
Copy	Copies the task to duplicate in a new location in the workspace, in an operator or expression, or in another task.
Paste	Places a cut or copied task in the workspace, in an operator or expression, or in another task.
Delete	Removes the task from the workspace.
Line Break	A toggle for moving task after the selected task to the next line below the selected task.
Properties	Opens the task property page for the selected task.

Open Task	Opens the task to show the commands and expressions that constitute the task.

WORKSPACE

Right-click in the workspace to display the following menu options:

MENU	DESCRIPTION
Paste	Places a cut or copied command or task in the workspace, in an operator or expression, or in another task.
View Extended	Hides the right panel and expands the operator containers within the sequence in the workspace to show the tasks, commands, or operators contained within.
View Normal	Collapses the operator container in the right panel for the tasks, commands, and operators contained within the selected operator.

How to Create a Task

Do one or all of the following one or many times:

- From the Commands palette, drag a command and then drop it in the workspace. The command property page for that command appears.

  Review the values for each command property and modify, if necessary.

  For descriptions of the commands, refer to List of Commands.
- From the Tasks palette, drag a task and then drop it in the workspace. The task property page for that task appears.
- Review the values for each task property and modify, if necessary.

  For descriptions of the tasks, refer to List of Tasks.
- From the Operators palette, drag an expression, variable, or operator and then drop it in the workspace.

  For more information about variables, refer to Working with Variables.

Optionally, use the Property Page Creator to create a task property page for the custom task.

View a Task

In the **Task Builder**, do one of the following:

- On the **Tasks** palette, do one of the following:
  - Double-click a task.
  - Right-click on a task and then on the submenu displayed, click **Open**.
- Click **Open** to display the **Open Task** window.
  a. Optionally, clear the **Show Latest Version** check box to see all versions of all tasks that have been created on the computer and have not been deleted.
  b. Select the task to open.
  c. Click **OK** to display the task in the workspace.

NOTE **Multiple tasks can be open in the same builder. Individual tabs appear at the top of the window for each open task. Click on the tab to view the task in the workspace.**

Modify a Task

Modify a task by doing any of the following:

- Adding tasks, commands, or operators to the workspace.
- Deleting tasks, commands, or operators from the workspace.

  Tasks, commands, and operators can be deleted from the workspace by pressing the **DELETE** key.
- Modifying the properties of the tasks, commands, or operators in the workspace.
- Changing the description or custom icon after clicking **Modify**.

Save a Task

1. Click **Save** to display the **Save Task** window.
2. On the **Save Task** window:
   a. In the **Name** field, type a task name.
   b. In the **Description** field (optional), type a description for the task.
   c. Next to the **Custom Icon** field, click the browse button and then select an icon for the task (optional). The icon can be of file type Icon (.ICO), Bitmap (.BMP), or JPEG (.JPG), GIF (.GIF), or Portable Network Group (.PNG).
   d. In the **Task Type** field, check the appropriate box or boxes to indicate the filtering for this task.
   e. Click **OK**.

The task is saved and listed in the **Tasks** palette.

How to Export Tasks

1. In the Task Builder, click **Export** to display the **Export** window.
2. In the **Export** window:
   a. In the **Select the items to be exported** field, select the tasks.
   b. In the **Select a path** field, do either of the following:
      - Accept the default path of C:\Documents and Settings\OS User Name\My Documents\TRILUTION LC x.x\Export.
      - Click to display the **Browse For folder** window. On the **Browse For folder** window, select a folder and then click **OK**.
3. Click **OK**. On completion of the export operation, the task is saved in the specified folder with a .LCTE extension.

   NOTE If a task with the same name is found in the export path, an option is provided to rename or overwrite the task or to skip the export operation for that task.

4. When the export success/fail dialog appears:
   - Click **Details** to view the log information of the export operation.
   - Click **OK**.

How to Import Tasks

1. In the **Task Builder**, click **Import**. The **Select Task Exported Files** window appears.
2. in the **Select Task Exported Files** window:
   a. Browse for and select the **Task Exported files** (.LCTE).
   b. Click **Open**.

   If a custom task with the same name already exists on the system, a dialog appears with options to import the custom task or all custom tasks as a new version (overwrite) rename the custom task, or skip the import operation for that custom task or all custom tasks.
3. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Delete a Task

1. On the **Tasks** palette, do either of the following:
   - Select a Task and then right-click to view the submenu. On the submenu, select **Delete**.
   - Open a **Task** and on the action bar, click **Delete**.

   NOTE Gilson-supplied tasks cannot be deleted.
2. On the delete confirmation dialog box, choose whether to delete only the current version or all versions of the task. The default is to delete only the current version of the task. To delete all versions of the task, select the **Delete All Versions** check box.
3. Click **Yes**. The task is deleted.
4. Optionally, delete the task permanently using the Purge and Recover utility.

Close

Close the Open Task

To close the task that is open in the workspace, click **Close**.

Close All Open Tasks

To close all open task, but leave the **Task Builder** open, click **Close All**.

Close the Task Builder

To close the **Task Builder**, click on the upper right corner of the **Task Builder**.

BED LAYOUT AND UTILITIES

Access the Bed Layout and Utilities by choosing **Liquid Chromatography|Utilities|Bed Layout and Utilities**.

Key concepts to learn about the Bed Layout and Utilities are:

- How to Create a Template
- How to Create a Rack
- How to Create a Mobile Rack
- How to Export Racks and Templates
- How to Import Racks and Templates

Custom Templates

TRILUTION allows for using pre-defined templates or creating a custom template with footprints. When creating a custom template, the software requires information about the physical dimensions of the template and the location of the origin (where 0,0,0 is).

Keywords:

- Template: The bottom, required layer of a bed layout. Only footprints can be added to templates. For more information, refer to How to Create a Template.
- Origin: Defined by the user, the location of the coordinates X=0, Y=0, Z=0. For more information, refer to Origin.
- Footprint: A placeholder or area that accepts racks. For more information, refer to Add Existing Rack Footprints to Template or Create a Rack Footprint.
- Rack: A rack requires a footprint before it can be added to a template. Examples of racks are racks, rinse stations, injection port bars, tip boxes, and microplates. For more information, refer to How to Create a Rack or How to Create a Mobile Rack.

How to Create a Template

1. Click **New Template**. The New Template window appears.
2. In the New Template window, enter the template dimensions and location (Origin).
3. Select one or more compatible instruments by checking the box or boxes.
4. Click **OK**.
5. Add, or create and then add, rack footprints to the template. For more information, refer to Add Existing Rack Footprints to Template or Create a Rack Footprint.
6. Click **Save As**. The Save As Template window appears.
7. Enter the template name, short description, and long description in the Save As Template window.
8. Click **OK**.

Add Existing Rack Footprints to Template

A rack footprint is an area that accepts racks. Use Gilson-supplied rack footprints or create custom rack footprints.

Add a Single Rack Footprint

To add a single rack footprint to a template:

1. Click on the template. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click and then select **Add Elements...**.

   The Template Elements dialog appears.
3. Select a Rack Footprint.
4. Enter the X, Y, and Z Relative positions.

   The position is calculated with respect to the origin. For more information, refer to Origin.

   When X = 0 and Y= 0, the center of the footprint is positioned over the origin.

   When Z = 0, the bottom of the footprint is placed at the same level as the top of the template.
5. Optionally, select a value from the Rotation drop-down. The default is 0°. (Rotation values: 90°, 180°, and 270°)
6. Click **Update Preview**. Make modifications, if necessary. Click **Reset** to clear the footprint from the preview, if necessary.
7. Click **Add**.
8. Click **Close** to return to the template.

Add Multiple Rack Footprints

To add an array of identical rack footprints to a template:

1. Click on the template. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click and then select **Add Elements...**.

   The Template Elements dialog appears.
3. Select the Rack Footprint to add as an array.
4. Select the **Multiple** check box to enable the necessary fields.
5. Enter the X, Y, and Z Relative positions for the center of the element in column 1, row 1.

   The position is calculated with respect to the origin. For more information, refer to Origin.

   When X = 0 and Y= 0, the footprint in column 1, row 1 is centered over the center of the origin.
6. Specify the number of columns and the number of rows.
7. Specify the distance between footprints within a column (X Offset) and the distance between wells within a row (Y Offset).

8. Optionally, select a value from the Rotation drop-down. The default is 0°. (Rotation values: 90°, 180°, and 270°)
9. Click **Update Preview**. Make modifications, if necessary. Click **Reset** to clear the footprints from the preview, if necessary.
10. Click **Add**.
11. Click **Close** to return to the template.

Create a Rack Footprint

1. Click on the rack or template. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
3. Click **Rack Footprint**, and then click **New**.
4. Enter a Footprint Name for the rack footprint.
5. Select the Shape: Rectangle or Circle.
   a. For a rectangle, enter the Length and Width.
   b. For a circle, enter the Diameter.
6. Click **OK.**

To add the new rack footprint to a template, refer to Add Existing Rack Footprints to Template or to add it to a rack, refer to Add Existing Rack Elements to Rack.

Modify a Rack or Template

To make changes to the properties of a rack or template:

1. Select the rack or template.
2. Right-click, and then select **Properties**.
3. Make desired changes to the properties, and then click **OK**.
4. Save the rack or template.

Delete a Rack or Template

Gilson-supplied racks and templates cannot be deleted.

To delete user-created custom racks or templates:

1. Click **Delete Template to delete a template or Delete Rack to delete a rack**. The **Delete Rack** or **Delete Template** window appears.
2. Select the rack or template to be deleted and then click **Delete**. All versions of the rack or template are deleted.

   To delete a specific version, select **Show Versions**, select the version to delete, and then click **Delete**.
3. Optionally, delete the rack or template permanently using the Purge and Recover utility.

Custom Racks

Create a rack by specifying the dimensions for the rack and the wells or elements to be used on the rack. Either create custom wells or elements or use the pre-defined wells and elements provided by Gilson. Wells and elements can be added individually or as an array.

Information stored concerning the rack includes its physical dimensions, the type of wells that it holds and their location, and the templates on which the rack can be placed.

To view the properties of an element, select it, right-click, and then select **Properties...**.

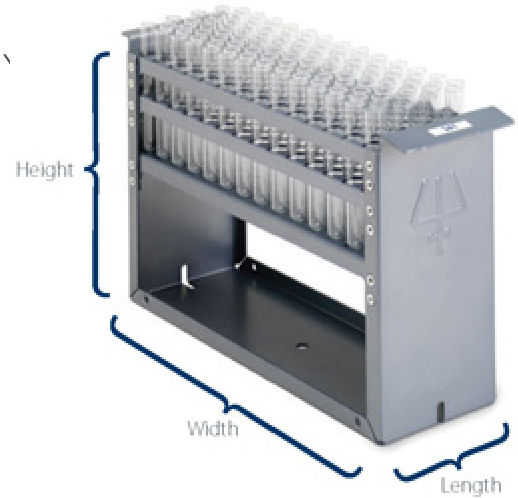
Keywords:

- Rack: A rack requires a footprint before it can be added to a template. Examples of racks are racks, rinse stations, injection port bars, tip boxes, and microplates. For more information, refer to How to Create a Rack or How to Create a Mobile Rack.
- Rack Element: Rack elements include rack footprints, wells, tips, handles, or mobile well footprints. For more information, refer to Add Existing Rack Elements to Rack or Create a New Rack Element.
- Rack Footprint: Area that accepts racks. For more information, refer to Create a Rack Footprint.
- Well: Wells can only go in racks. For more information, refer to Create a Well.
- Target: A position defined within a well. Zones can be assigned to a target. For more information, refer to Create a Target in a Well.
- Template: The template is the bottom, required layer of a bed layout. Only footprints can be added to templates. For more information, refer to How to Create a Template.
- Handle: A position designated in a rack, which makes the rack mobile. A handle cannot be created, but existing handles can be added to a rack. For more information, refer to Add Existing Rack Elements to Rack.
- Collect Handle: Target to which the probe is sent to move the DEC rack to the Collect position. For more information about how to add a Collect Handle to a rack, refer to Add Existing Rack Elements to Rack.
- Drain Handle: Target to which the probe is sent to move the DEC rack to the Drain position. For more information about how to add a Drain Handle to a rack, refer to Add Existing Rack Elements to Rack.
- Initial Handle: Target to which the probe is sent during rack initialization. The Initial Handle position should be as close as possible to the Collect or Drain Handle positions (recommend 1.5 mm). Too large of a distance between the Initial Handle and the Drain or Collect Handle may result in the probe missing Drain or Collect Target after initialization of the rack. For more information about how to add an Initial Handle to a rack, refer to Add Existing Rack Elements to Rack.
- Mobile Well Footprint: Area that accepts mobile wells. For more information on how to use this feature, contact training@gilson.com.

How to Create a Rack

1. Click **New Rack. T**he New Rack dialog appears.
2. In the New Rack window, set the rack shape: Rectangle or Circle.

3. Enter the dimensions.
   a. For a rectangular rack, define Length (X), Width (
   b. For a circular rack, define the diameter and the height.

   The rack height is measured with respect to the point of contact between the rack and its holder.

   For a rack placed on a template, ‘Height’ is measured with respect to the rack bottom.

   For a rack placed on antlers, ‘Height’ is measured with respect to the underside of the rack tabs. A height of “0” means that the top of the rack is level with the plane of the support.

   This reference is important, when a footprint or well is added to a custom rack, the height Z is calculated with respect to this plane. In addition, the probe height in a custom rack is calculated with respect to this plane.

   Be very careful when designing a custom rack that can be placed on antlers and on a tray, as the probe height in tasks will be calculated with respect to this coordinate.
4. Enter the coordinates for the rack Origin. The default is 0,0,0, which is the center of the rack.
5. Select one or more footprints where the rack can be placed.
6. Click **OK**.
7. Add, or create and then add, rack elements to the rack. For more information, refer to Add Existing Rack Elements to Rack or Create a New Rack Element.
8. Click **Save As**. The Save As Rack window appears.
9. Enter the rack name, short description, and long description in the Save As Rack window.
10. Click **OK**.

How to Create a Mobile Rack

A Mobile Rack is made up of three separate racks: a Holder rack, the DEC rack (“slider” rack), and the Collect rack.

The Holder rack has three parts:

- Collect Footprint
- DEC Footprint
- Sink (Drain well)

The DEC (“slider”) rack has four parts:

- Initial Handle – Probe position when initializing the mobile rack.
- Drain Handle – Probe position when moving the mobile rack to Drain.
- Collect Handle – Probe position when moving the mobile rack to Collect.
- DEC wells (DEC Cartridges)

The Collect rack has one part:

- Collect wells (tubes)

Holder Rack

1. Create the rack. For more information, refer to How to Create A Rack.
2. Create and Add Collect Footprint and DEC Footprint
   a. aFollow the instructions for Create a Rack Footprint twice: once for the Collect Footprint and once for the DEC Footprint.
3. Create and Add Sink (Drain Well).
   a. Follow the instructions for Create a Well. Be sure to select Drain for the Well Type.
4. Save the rack.

DEC (“Slider”) Rack

1. Create the rack. For more information, refer to How to Create a Rack.
2. Add Handles
   a. Follow the instructions for Add Existing Rack Elements to Rack three times: once to add the Initial Handle, once to add the Drain Handle, and once to add the Collect Handle.
3. Add DEC Wells (DEC Cartridges).
   a. Follow the instructions for Add Existing Rack Elements to Rack. Gilson supplies three DEC options, which are filtered under the rack element type Well: DEC 1mL, DEC 3 mL, and DEC 6 mL.
4. Set Mobile Rack Settings.
   a. Click **Mobile Rack Settings**. The Mobile Rack Settings dialog appears.
   b. Click **New**.
   c. Select the DEC Footprint that was created for the Holder Rack.
   d. Indicate the Drain Y and Collect Y positions.

      Drain = 0 minus ½ the width of the DEC Footprint plus ½ the width of the DEC Rack

      Collect = ½ the width of the DEC Footprint minus ½ the width of the DEC Rack

      The preview will show the mobile rack positions overlaid. The Collect position is green. The Drain position is red.
5. Save the rack.

Collect Rack

1. Create the rack. For more information, refer to How to Create a Rack.
2. Add Wells.
   a. Follow the instructions for Add Existing Rack Elements to Rack to add the collection vessels to the rack, which are filtered under the rack element type **Well**.
3. Save the rack.

Add Existing Rack Elements to Rack

Rack elements include rack footprints, wells, tips, handles, or mobile well footprints.

Using the Rack Elements dialog, add a single rack element or an array of rack elements to the rack.

Add a Single Rack Element

To add a single rack element to a rack:

1. Click on the rack. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
3. Select an element: Rack Footprint, Well*, Tip*, Handle, or Mobile Well Footprint.
4. Enter the X, Y, and Z Relative positions.

   The position is calculated with respect to the origin.

   When X = 0 and Y = 0, the center of the element is positioned over the origin.

   When Z = 0, the bottom of the element is placed at the same level as the top of the rack: level with the point of contact between the rack and its holder (tray or antler).

   *When adding a well or tip, additional Z options are available. Choose to Measure Z to well/Tip Bottom or Measure Z to Well/Tip Top.
5. Optionally, select a value from the Rotation drop-down. Default is 0°. (Rotation values: 90°, 180°, and 270°)
6. Click **Update Preview**. Make modifications, if necessary. Click **Reset** to clear the element from the preview, if necessary.
7. Click **Add**.
8. Click **Close** to return to the rack.

Add Multiple Rack Elements

To add an array of identical rack elements to a template:

1. Click on the rack. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
3. Select the element that you want to add as an array: Rack Footprint, Well*, Tip*, Handle, or Mobile Well Footprint.
4. Select the Multiple check box to enable the necessary fields.

5. Enter the X, Y, and Z Relative positions for the center of the element in column 1, row 1.

   The position is calculated with respect to the rack center.

   When X = 0 and Y= 0, the element in column 1, row 1 is centered over the origin.

   When Z = 0, the bottom of the element is placed at the same level as the top of the rack: level with the point of contact between the rack and its holder (tray or antler).

   *When adding a well or tip, additional Z options are available. Choose to Measure Z to Well/Tip Bottom or Measure Z to Well/Tip Top.
6. Specify the number of columns and the number of rows.
7. Specify the distance between wells within a column (X Offset) and the distance between wells within a row (Y Offset).
8. Optionally, select a value from the Rotation drop-down. Default is 0°. (Rotation values: 90°, 180°, and 270°)
9. Click **Update Preview**. Make modifications, if necessary. Click **Reset** to clear the elements from the preview, if necessary.
10. Click **Add**.
11. Click **Close** to return to the rack.

Create a Rack Element

Rack elements include rack footprints, wells, tips, handles, or mobile well footprints. TRILUTION allows for using the pre-defined elements provided by Gilson or for creating custom elements for use with non-standard equipment.

For more information about creating a rack element, refer to:

- Create a Rack Footprint
- Create a Well
- Create a Tip
- Create a Mobile Well Footprint

Modify a Rack or Template

To make changes to the properties of a rack or template:

1. Select the rack or template.
2. Right-click, and then select **Properties**.
3. Make desired changes to the properties, and then click **OK**.
4. Save the rack or template.

Delete a Rack or Template

Gilson-supplied racks and templates cannot be deleted.

To delete user-created custom racks or templates:

1. Click **Delete Template to delete a template or Delete Rack to delete a rack**. The **Delete Rack** or **Delete Template** window appears.
2. Select the rack or template to be deleted and then click **Delete**. All versions of the rack or template are deleted.

   To delete a specific version, select **Show Versions**, select the version to delete, and then click **Delete**.
3. Optionally, delete the rack or template permanently using the Purge and Recover utility.

Create a Rack Element

Rack elements include rack footprints, wells, tips, handles, or mobile well footprints. TRILUTION allows for using the pre-defined elements provided by Gilson or for creating custom elements for use with non-standard equipment.

For more information about creating a rack element, refer to:

- Create a Rack Footprint
- Create a Well
- Create a Tip
- Create a Mobile Well Footprint

Create a Rack Footprint

1. Click on the rack or template. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
3. Click **Rack Footprint**, and then click **New**.
4. Enter a Footprint Name for the rack footprint.
5. Select the Shape: Rectangle or Circle.
   a. For a rectangle, enter the Length and Width.
   b. For a circle, enter the Diameter.
6. Click **OK.**

To add the new rack footprint to a template, refer to Add Existing Rack Footprints to Template or to add it to a rack, refer to Add Existing Rack Elements to Rack.

Create a Well

1. Click on the rack. It highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
3. Click **Well** and then click **New**.

4. Enter a Well Name for the well.
5. Select a Well Type from the drop-down list.
6. Select the Shape: Rectangle or Circle.
   a. For a circular well, enter the Diameter, Height, and Maximum Volume for the well.
   b. For a rectangular well, enter the Length, Width, Height, and Maximum Volume for the well.
7. If the well is to be a mobile well, select the mobile well footprints with which the well should be associated. For more information about creating mobile well footprints, refer to Create a Mobile Well Footprint.
8. Click **OK**.

For information about adding a target within a well, refer to Create a Target in a Well.

Create a Target in a Well

1. Right-click on a rack and then select **Add Elements...**.
2. Click **Well,** select the well to which the target(s) will be added, and then click **Edit**.
3. Click **New**.
4. Enter a Target Name for the target.
5. Select a Target Type.
6. Enter the X, Y, and Z Relative positions for the target. The position is calculated with respect to the center of the well.
7. Repeat steps 3–6 for each additional target to be added.
8. Click **OK** to exit the Edit Well dialog.

Create a Tip

1. Click on the rack, it highlights in red.
2. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
3. Click **Tip** and then click **New**.
4. Enter a Tip Name for the Tip.
5. For the **Shape**, select **Circle**.
6. For the **Diameter**, enter the maximum inside diameter of the tip.
7. For the **Height**, enter the total length of the tip (Top – Bottom = Height).
8. For the **Effective Height**, enter the length from the bottom of the tip holder to the bottom of the tip when the tip is installed.
9. For the **Maximum Volume**, enter the maximum amount of liquid that can be aspirated into the tip.

10. Select the **Tip Crush Z** target, right-click, and then select **Edit**.

    Tip Crush Z is used to install the tips by moving the tip holder down in "spongy" mode. The Tip Crush Z is generally greater than the actual distance need to install the tip. The greater the distance traveled, the greater the force used to install the tip.

11. For **Z Relative**, enter the distance from the tip top (less Target Z Delta) while the tip holder is "spongy" to crush the tip onto the tip holder, and then click **OK** to return to the New Tip dialog.
12. Select the **Tip Flight Z** target, right-click, and then select **Edit**.

    Tip Flight Z is used to set a height that will allow the bottom of the tip to clear all of the racks, while preventing the tip from being removed when the Move Z Top command is used. While the tip is installed, the Move Z Top command will move to the Z Safe Height – Tip Flight Z. Ejecting the tip will reset the height to the Z Safe Height.

13. For **Z Relative**, enter the height from the top (less Z Safe Height) at which the bottom of the tip travels after the tips are installed, and then click **OK** to return to the New Tip dialog.
14. Select the **Tip Target Z Delta** target, right-click, and then select **Edit**.

    Tip Target Z Delta is used to seat the tip holder into the tip before doing the Crush Z and is also the height to move to after doing the Crush Z and before moving to the top.

15. For **Z Relative**, enter the distance traveled from the tip top, and then click **OK** to return to the New Tip dialog.
16. Click **OK** in the New Tip dialog.

NOTE	Multiple tip types can be created for the same rack tip box, as long as the tip height and diameter are the same. Modify the Tip Target Z Delta, Tip Crush Z, and Tip Flight Z to install the tips differently without creating a new rack.

Create a Mobile Well Footprint

1. Click on the rack, it highlights in red.
2. Do either of the following:
    - Click **Add Elements**.
    - Right-click, and then select **Add Elements...**.
3. Click **Mobile Well Footprint** and then click **New**.
4. Enter a Footprint Name for the mobile well footprint.
5. Select the Shape: Rectangle or Circle.
    a. For a rectangle, enter the Length and Width.
    b. For a circle, enter the Diameter.
6. Click **OK**.

For more information on how to use this feature, contact techsupport@gilson.com.

Modify a Rack Element

A Gilson-supplied rack element can be modified, but must be given a new name. Modifying a Gilson-supplied rack element can be a simple way to create a new rack element.

To modify a rack element:

1. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
2. Click on the type of element to modify: Rack Footprint, Well, Tip, or Mobile Well Footprint.
3. Select the element to modify. The **Edit** button becomes active.
4. Click **Edit.**
5. Make desired changes to the properties and then click **OK**.

   The properties are updated for future use of the rack element. Racks that use that rack element are NOT updated to use the new rack element properties.

Modify a Target

1. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
2. Click **Well**, select the well that contains the target, and then click **Edit**. The **Edit Well** dialog is displayed.
3. Select the target and then click **Edit**.
4. Modify the Target Name for the target, if desired.
5. Modify the relative X, Y, and Z positions for the target, if desired. The position is calculated with respect to the center of the well.
6. Click **OK** to exit the **Target Properties** dialog.

Delete a Rack Element

Gilson-supplied rack elements cannot be deleted.

To delete a user-created custom rack element:

1. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
2. Click on the type of element to delete: a custom Rack Footprint, Well, Tip, or Mobile Well Footprint.
3. Select the element to delete.
4. Click **Delete**.

Delete Element from Rack or Rack Footprint from Template

To delete a rack element from a rack or a rack footprint from a template, select the element or rack footprint, and then do either of the following:

- Right-click and then select **Delete**.
- Press the **DELETE** key.

Delete a Target

1. Do either of the following:
   - Click **Add Elements**.
   - Right-click, and then select **Add Elements...**.
2. Click **Well**, select the Well that contains the target, and then click **Edit**. The **Edit Well** dialog is displayed.
3. Select the target and then click **Delete**.
4. Click **OK** to exit the Edit Well dialog.

HOW TO EXPORT RACKS AND TEMPLATES

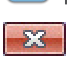
1. Click **Export**.
2. Select the **Rack List** or **Template List** option button.
3. Select a rack or template.
4. Click the browse icon. The **Browse For Folder** window is displayed.
5. On the **Browse For Folder** window, select a folder to which the rack or template will be exported, and then click **OK**.
6. Click **OK**. On completion of the export operation, the rack or template is saved in the specified folder with a .LHR (Rack) or .LHT (Template) extension.
7. When the export success/fail dialog appears:
   - Click **Details** to view the log information of the export operation.
   - Click **OK**.

How to Import Racks and Templates

1. Click **Import**. The Import window appears.
2. From the Import window:
   a. aBrowse for and select the Rack or Template Exported Files.
   b. Click **Open**.
3. When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Close Bed Layout and Utilities

Do either of the following:

- Click  in the lower right corner to return to the main menu.
- Click  in the upper right corner to close the utility.

OPEN ACCESS

Users log on to the **TRILUTION LC Open Access**, choose the application to run from a pick-list, and then use a simple "wizard", which directs them through the experiment. The intuitive nature of the "wizard" ensures Users will have a quick learning curve. For more information, refer to Open Access Wizard.

TRILUTION LC's multi-tiered approach allows users of all levels, from novice to expert, access to one of the leading chromatographic software packages in the industry. Several laboratories can benefit from a single Administrator's expertise.

Key concepts to understand about **Open Access** are:

- How to Enable Open Access for Applications
- How to Start Open Access

TRILUTION LC Open Access

Open Access provides a graphical interface for setting up an application run. Complete the **Open Access Wizard** to select the samples to be processed, satisfy any variables, and optionally set the initial volume of wells.

How to Enable Open Access for Applications

Before a user can run an application in **Open Access**, the application must be enabled for **Open Access** and the project must be shared in the **Project Library** of TRILUTION LC. Users who can enable **Open Access** for applications and share projects are those who have the **View**, **Create**, and **Modify** permissions for the **Project Library**. Enabling **Open Access** for the application is a right-click option. (Refer to Enable Open Access.) Sharing a project is also a right-click option. (Refer to Project and How to Share a Project.)

After an application has been enabled for **Open Access**, a dialog appears requesting specification of the **Sample Zone**. The dialog also includes a check box to **Enable Placement Safety** that defaults selected. When placement safety is enabled, users will not be prompted to place samples if the instrument is running.

NOTE	**All methods in an Open Access application must use the same bed layout (template, racks, zones, and wells) for instruments at the same unit ID. Additionally, the Sample Well in the injection task must be #Sample Well.**

How to Start Open Access

To start the software:

1. Do either of the following:
   - Click the Start button and then select All Programs>Gilson Applications>TRILUTION LC x.x>TRILUTION LC Open Access.
   - On the Desktop, double-click the **TRILUTION LC Open Access** icon ( ).

   The **Open Access Application** window appears.
2. On the **Open Access Application** window, click **Run Application**. The **TRILUTION LC log in** window appears.
3. In the **TRILUTION LC log in** window:
   a. aIn the **Username** field, type your user name.
   b. In the **Password** field, type your password.

   > **NOTE** Passwords have a 20-character limit.

   c. Click **Log In**.

Open Access Application Window

Description

In the **Open Access Application** window:

- Select an application to run.
- View the applications running and in queue for all users.
- Right-click on a queued or running application, and then select **Fraction Re-injection** to set the criteria for fraction re-injection for that application.
- Right-click on a queued application, and then select **Remove Application** to remove the application from the queue before it begins running.
- Free wells for subsequent application runs.

Action Buttons

The **Open Access Application** window has the following action buttons:

- **Emergency Stop**: This button stops the run and stops the flow from the pumps.
- **Log Off**: This button ends the current user's session.
- **Pause**: This button causes gradient progression and task execution to enter a timed hold. Mobile phase continues to flow at the composition and flow rate at the time of the pause; data collection and fraction collection continue.

  To continue the gradient progression and task execution, click **Continue**. Task execution resumes from the time of the pause. The gradient progression resumes at the composition and flow rate when the run was paused. The run time extends the duration of the pause.
- **Run Application**: This button displays the **TRILUTION LC Log In** dialog and then applications available to run for the logged on user.

- **Show Graph**: This button displays the real-time chromatogram if clicked while the application is running.
- **Solvent Settings**: This button allows you to update, while running, the volume of solvents available.
- **Results**: This button allows you to view the results of your run. For more information, refer to Results.
- **Close**: Exits and closes **TRILUTION LC Open Access**.

Open Access Wizard

To begin using the **Open Access Wizard**:

1. Click **Run Application**. The **TRILUTION LC Log In** window appears.
2. In the **TRILUTION LC Log In** window:
   - In the **Username** field, type your user name.
   - In the **Password** field, type your password.
   - Click **Log In**. The applications are listed in the **Applications** palette.
3. Double-click the name of the application that will be run. The **Open Access Wizard** begins.

Open Access Wizard

The **Open Access Wizard** comprises six main screens, appearing in the following order:

1. Application Information
2. Sample Submit
3. Sample Placement
4. Summary
5. Submission of Sample(s)
6. Free Wells

Application Information

Description

In the **Application Information** window, name the run.

The **Application Information** screen displays the following information:

- **Application Name**: The name of the current application.
- **Short Description**: The short description entered, if any, for the current application.
- **Long Description**: The long description entered, if any, for the current application.

Action Buttons

The Application Information screen has the following action buttons:

- **Continue**: This button advances to the **Sample Submit** screen.
- **Cancel**: Exits the **Open Access Wizard** and returns to the **Open Access Main Menu**.
- **Help**: Provides information about the screen.

Sample Submit

Description

In the **Open Access Wizard - Sample Submit** screen:

- Set the number of samples to run.

  Number of Samples: The field for indicating the number of samples that will be run. After typing the number, press **ENTER**.
- Provide information about each sample to run.
- Set initial volumes (optional).
- Set fraction re-injection criteria (optional).

The **Sample Submit** screen contains an editable grid that specifies how many samples will be run, information about those samples, and qualifies any variables in the associated methods.

For more information about using the editable grid, refer to How to Create a Sample List.

Action Buttons

The **Sample Submit** screen has the following action buttons:

- **Advanced**: This button allows you to specify that a sample well can be used more than once by displaying the sample well column and enabling it to be edited.
- **Back**: This button returns to the **Application Information** screen.
- **Next**: This button advances to the **Sample Placement** screen.
- **Cancel**: Exits the **Open Access Wizard** and returns to the **Open Access** main menu.
- Help: Provides information about the screen.
- : Allows you to set initial volumes for any or all wells in each bed layout in the application. For more information, refer to Set Initial Volumes.
- : Allows you to set the criteria for fraction re-injection and to select the method to run when re-injecting fractions. For more information, refer to How to Create a Sample List to Re-inject Collected Fractions.

Sample Placement

Description

The **Sample Placement** screen confirms that you have added samples and shows where they will be placed.

⚠CAUTION	Do not place the samples now, as the instrument may be in motion.

Action Buttons

The **Sample Placement** screen has the following action buttons:

- **Back**: This button returns to the Sample Submit screen.
- Next: This button advances to the Summary screen.

- Cancel: Exits the Open Access Wizard and returns to the Open Access main menu.
- **Help**: Provides information about the screen.

Summary

Description

The **Summary** screen has the following sections:

- Current User: The current user logged in to TRILUTION LC Open Access.
- Number of Samples: The number of samples that will be run.
- Time of Submission: The length of time that must elapse before samples can be placed for the application run being set up.
- Mobile Phase Status: Lists the volume of mobile phase required based on the number of samples and the flow rate and mobile phase composition set in the method. Also lists the available volume, which is set by clicking Solvent Settings.
- Number of Applications in Queue: The number of applications that must finish running before the current application will begin running.
- Estimated Time to Start: The approximate length of time that will elapse before the current application will begin running.
- Estimated Time to Complete: This is a length of time equal to the Estimated Time to Start + (Run Time * Number of Samples).

Action Buttons

The **Summary** screen has the following action buttons:

- **Solvent Settings**: Allows you to indicate the volume of reservoir solvent; uses your unit settings for volume for the unit of measure.
- **Back**: Returns to the Sample Placement screen.
- **Finish**: Exits the **Open Access Wizard** and displays the Submission of Sample(s) screen, if the instrument is ready to accept the samples.
- **Cancel**: Exits the **Open Access Wizard** and returns to the **Open Access** main menu.
- **Help**: Provides information about the screen.

Submission of Sample(s)

Description

The **Submission of Sample(s)** screen shows where samples should be placed.

Action Buttons

The **Submission of Sample(s)** screen has the following action button:

- **OK**: This button starts the application running and advances to the queue listing in the **Open Access Application** window.

Free Wells

Description

The **Free Wells** dialog is accessed by double-clicking a completed application in the **Open Access Application** window. It shows you where your samples were and where your fractions are. Use this screen to free those wells for use by other applications. You will not be able to free wells that are used in a running application.

Action Buttons

The **Free Wells** dialog has the following action buttons:

- **Free Wells**: Clicking this button lets the software know that the wells previously used by the selected application are now available for use by other applications and it closes the dialog.
- Cancel: Exits the Free Wells dialog without freeing the wells.

The queue will indicate if there are free wells pending.

When the **Application Run** finishes, you will be prompted to remove the vessels.

ELECTRONIC RECORD MANAGEMENT (ERM) FEATURES

The implementation of an electronic record management system can be complex. TRILUTION LC can assist chromatographers in attaining 21 CFR Part 11 compliance through the implementation of electronic record management (ERM). The ERM features allow electronic records security and tracking (audit trails) and electronic signatures, as well as permitting customized user access levels within the software.

Key concepts to understand about electronic record management features are:

- ERM Administration
- User and Groups
- Share

For information about activating the ERM features, refer to ERM.

ERM Administration

ERM Features are accessed from the **Liquid Chromatography|Utilities|ERM|ERM Features** menu by a user assigned to the default Admin group. In this dialog, choose whether to enable electronic record management (ERM) features. Check boxes default cleared, thus ERM defaults disabled. When **Enable ERM Features** is selected, the Audit log is enabled. **When Enable Signature Points** is selected, a signature will be required by every user for every save. These signatures will be tracked in the **E-Signature** log.

For information on how to set up users and groups, refer to Users and Groups.

Users and Groups

During the software installation, by default, two groups are created: **Admin** and **Analyst**. **Administrator** is the default user in the **Admin** group. The Admin group is assigned all the rights. **Analyst** is the default user in the **Analyst** group. The Analyst group can view, create, and modify in the software.

Default Permissions for the **Admin** group are:

- Create
- Modify
- Delete
- View
- Import
- Export
- Run

Default Permissions for the **Analyst** group are:

- Create
- Modify
- View
- Run

Share

To enable other users to view or modify a project, it must be shared. Once shared, the logged on user can act on the project per the permissions assigned to that user's group. For example, a user with the **Modify Project Library** permission can make changes to a project that has been shared with him.

To share a project, the user must have the **View** and **Modify** permissions for the **Project Library**. He can then share any projects he has access to (he created them or they have been shared with him).

NOTE	Shared projects can only be deleted by the user who created the project regardless of whether another user has Delete permissions in the Project Library.

GILSON SERVER SETTINGS

The COM port and baud rate for GSIOC communication can be set through GSIOC Server Settings.

To change the COM port or baud rate:

1. Right-click on the Server icon ( ) in the task bar and then select **Settings** from the menu.
   Note: Settings cannot be changed if the server is being used by a Gilson program (for example, the GSIOC Utility).
2. From the **Port** drop-down, select the computer's serial communications (COM) port to which the Gilson interface instrument is connected .
3. From the **Baud** drop-down, select 19200 or 9600 to set the baud. The baud is the rate of data transmission between the computer and the Gilson instrument.
4. If the check box **Ignore Port Not Found** is not selected and the system does not have a serial port (RS232 port), a message will be displayed stating that a COM port could not be found. Gilson applications are blocked while this message box is open. By default, the **Ignore Port Not Found** check box is selected.
5. Click **OK** to save the changes.

GSIOC UTILITY

The GSIOC Utility allows you to issue commands to Gilson GSIOC instruments. Your local Gilson representative may ask you to use this utility to verify that an instrument is connected correctly to the PC. For communication to occur, the Gilson instrument must be connected via an RS-232 connection to the PC or connected via a GSIOC connection to a Gilson interface instrument that is connected to the PC.

Start the GSIOC Utility

To start the GSIOC Utility:

1. Locate the GSIOC Utility (GSUTIL32.EXE) using Windows Explorer or the shortcut at **Start > Gilson Applications > Utilities > GSIOC Utility**.

   The default installation path on a Windows® 10 (64-bit) system is **C:\Program Files (x 86)\Gilson\Utilities**.

2. Start the utility. The Gilson GSIOC Utility window appears.

Review the Port and Baud Information

In the Gilson GSIOC Utility window, review the COM port and baud information. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Server Settings to update the information.

List GSIOC Instruments

Using the GSIOC Utility, you can determine the instruments currently connected to the computer.

In the **Mode** menu, select **Scan!**

The **Unit ID** list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the PC and the instruments, and that the instruments do not have duplicate unit ID numbers

Basic Mode

Basic Mode

In the Basic mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments.

Review the **Port**, **IRQ**, and **Baud** information in this window. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Server Settings to update the information..

There are two drop-down menus in the **Basic** mode of the Gilson GSIOC Utility: Mode Menu and Help Menu.

Basic Mode Buttons and Features

Immediate Button

Sends an immediate command to the Unit ID selected.

Immediate commands request status information from an instrument. These commands are executed immediately, temporarily interrupting any command in progress. Each command is a string of no more than 40 characters.

A list of valid immediate commands for each instrument is available in its commands list or user's guide.

Buffered Button

Sends a buffered command to the Unit ID selected.

Buffered commands send instructions to an instrument. These commands are executed one at a time. Each command is a string of no more than 40 characters.

A list of valid buffered commands for each instrument is available in its commands list or user's guide.

Command Field

The Command field is where the command to be sent is specified. For more information on sending commands, refer to Send an Immediate Command or Send a Buffered Command.

Response Field

The Response field is where the response to an immediate or buffered command is displayed.

The response to a successfully completed buffered command is **ok**.

The response to an unsuccessfully completed immediate or buffered command is **#error**.

A list of valid responses to commands for each instrument is available in its commands list or user's guide.

Basic Mode Menus

Mode Menu

There are three options in the Mode menu: Scan!, Advanced, and Ghost.

Scan!

The **Scan!** option on the **Mode** menu allows you to scan for GSIOC instruments. After a scan, the Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate Unit ID numbers.

Advanced

The **Advanced** option in the **Mode** menu allows you to switch between the **Basic** and **Advanced** modes. A check mark means that the GSIOC Utility is in **Advanced** mode.

Ghost

The **Ghost** option in the **Mode** menu makes the GSIOC Utility window transparent (and always on top). This allows you to view another window behind the utility. The utility will remain fully functional in the Ghost mode.

Help Menu

About...

When selected, the **About** window appears.

This window displays the version of the Gilson GSIOC Utility, the GSIOC32.DLL, and the GSIOC Server. It also displays the Port, IRQ, and Baud set by the GSIOC Server Settings.

Advanced Mode

In the Advanced mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments. In this mode, immediate and buffered commands with comments can be saved to a command list to be used as needed. The command lines can be repeated automatically to monitor the status of the instrument.

Review the **Port**, **IRQ**, and **Baud** information by selecting **About...** from the **Help** menu. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Server Settings to update the information.

There are four drop-down menus in the Advanced mode of the Gilson GSIOC Utility: File Menu, Edit Menu, Mode Menu, and Help Menu.

Advanced Mode Buttons and Features

+ Button

The next to Immediate is used to insert an immediate command in the command list. For more information, refer to Insert an Immediate Command.

The next to Buffered is used to insert a buffered command in the command list. For more information, refer to Insert a Buffered Command.

Arrow Up or Arrow Down Button

These buttons (or) are used to change the position of a command in the command list.

How to Move a Command

Highlight the command in the command list and use to move the command up in the list or to move the command down in the list.

Immediate Button

Sends an immediate command to the Unit ID selected. The Comment field is not used.

Selecting the **Immediate** button will not add the command to the command list.

For more information, refer to Send an Immediate Command.

Buffered Button

Sends a buffered command to the Unit ID selected. The Comment field is not used.

Selecting the **Buffered** button will not add the command to the command list.

For more information, refer to Send a Buffered Command.

Response Field

The Response field is where the response to an immediate or buffered command is displayed.

The response will become gray after 15 seconds if no response is registered.

The response to a successfully completed buffered command is **ok**.

The response to an unsuccessfully completed immediate or buffered command is **#error**.

A list of valid responses to commands for each instrument is available in its commands list or user's guide

How to Send a Command Line

Double-click on the **Unit**, **Type**, **Command**, **Response**, or **Comment** field to send the immediate or buffered command for that specific command line.

Command Line Column Headings

REPEAT

A green check mark (✓) in the **Repeat** column means that an immediate command will automatically repeat when the **Auto Repeat** option is checked. Double-click on the **Repeat** field to select or deselect the **Auto Repeat** for that command line.

A yellow check mark (✓) in the **Repeat** column means that a buffered command will automatically repeat when the **Auto Repeat** option is checked. Double-click on the **Repeat** field to select or deselect the **Auto Repeat** option for that command line.

UNIT

This is the Unit ID for the instrument in the command line.

TYPE

I - Immediate Command, B - Buffered Command

COMMAND

This is the GSIOC command for the command line.

RESPONSE

This is the GSIOC response when the command line is initiated with a double-click on the **Unit**, **Type**, **Command**, **Response**, or **Comment** field. The response will become gray after 15 seconds if no response is registered.

COMMENT

This is an optional comment that can be added to the command line.

Advanced Mode Menus

There are four drop-down menus in the **Advanced** mode of the Gilson GSIOC Utility: File Menu, Edit Menu, Mode Menu, and Help Menu.

File Menu

There are four options in the **File** menu: Open, Save, Save As..., and Exit.

OPEN

The **Open** option in the **File** menu allows you to open previously created command lists (GSUTIL32 files). The extension for a GSUTIL32 file is .GSU.

SAVE

The **save** option in the **File** menu allows you to save the **Advanced** commands to GSUTIL32.GSU. The GSUTIL32.GSU file is automatically created in the location where GSUTIL32.EXE is stored.

The Advanced commands will automatically be saved to GSUTIL32.GSU if the Gilson GSIOC Utility is exited without saving.

The GSUTIL32. GSU is automatically opened when the **Advanced** mode is selected from the **Mode** menu.

SAVE AS...

The **Save As...** option on the **File** menu allows you to save the Gilson GSIOC Utility commands that are currently defined. The name and path of the file must be specified.

EXIT

The **Exit** option closes the Gilson GSIOC Utility software.

Edit Menu

There are four options in the Edit Menu: Insert Immediate, Insert Buffered, Selection, and Font....

INSERT IMMEDIATE

The **Insert Immediate** option in the **Edit** menu allows you to insert an immediate command in the command list. The new command will be added to the last line in the command list.

The GSIOC Command will not be inserted if there is already a command line in the list with the same Unit ID and Command.

For more information, refer to Insert an Immediate Command.

INSERT BUFFERED

The **Insert Buffered** option in the **Edit** menu allows you to insert a buffered command in the command list. The new command will be added to the last line in the command list.

The GSIOC Command will not be inserted if there is already a command line in the list with the same Unit ID and Command.

For more information, refer to Insert a Buffered Command.

SELECTION

Delete (Ctrl + D)

Deletes the highlighted command from the command list.

Up (Ctrl + U)
Moves the highlighted command up in the command list.

Down (Ctrl + D)
Moves the highlighted command down in the command list.

Execute (Ctrl + E)
Executes the highlighted command.

Repeat (Ctrl + R)
Adds or removes the repeat option for the highlighted command.

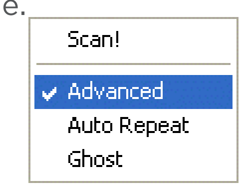
FONT...
The **Font...** option on the **Edit** menu allows you to change the font options for the command list fields and headers, as well as the **Unit ID**, **Comment**, and **Command** text boxes.

Mode Menu

There are four options in the **Mode** menu: Scan!, Advanced, Auto Repeat, and Ghost.

SCAN!
The **Scan!** option on the **Mode** menu allows you to scan for GSIOC instruments. After a scan, the Unit ID list box displays the unit ID and the version of each connected instrument. If any connected instrument is missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the PC and the instrument, and that instruments do not have duplicate Unit ID numbers.

ADVANCED
The **Advanced** option in the **Mode** menu allows you to switch between the **Basic** and **Advanced** modes. A check mark means that the GSIOC Utility is in **Advanced** mode.



AUTO REPEAT
The **Auto Repeat** option on the **Mode** menu allows you to repeat command lines that appear in the command list.

A command line will only repeat if a check mark appears in the **Repeat** field. A check mark can be added by double-clicking on the **Repeat** field and selecting the **Auto Repeat** check box.

Starting from the top command line, this mode will refresh one repeating command line every 1/10th of a second. For example, if there are ten command lines with **Repeat** selected, each of these command lines will be initiated every second.

Auto Repeat mode is useful for monitoring the instrument using immediate commands and is designated in the **Repeat** field with a green check mark.

Auto Repeat mode is not intended to be used as a programming tool with buffered commands. Repeating buffered commands will be executed at a fixed time interval regardless if a command has finished. For this reason, the check mark in the buffered command line is yellow.

Auto Repeat mode can be selected from the **Mode** menu or by selecting the check box next to **Auto Repeat**.

Auto Repeat is deselected by default with the **Advanced** mode is first opened. When **Gilson GSIOC Utility - Advanced** is saved or closed, the status of **Auto Repeat** is saved.

Ghost

The **Ghost** option in the **Mode** menu makes the GSIOC Utility window transparent (and always on top). This allows you to view another window behind the utility. The utility will remain fully functional in the **Ghost** mode.

Help Menu

ABOUT

When selected, the **About** window appears.

This window displays the version of the Gilson GSIOC Utility, the GSIOC32.DLL, and the GSIOC Server. It also displays the Port, IRQ, and Baud set by the GSIOC Server Settings.

Commands

Immediate Command

Immediate commands request status information from an instrument. These commands are executed immediately, temporarily interrupting any command in progress. Each command is a string of no more than 40 characters.

A list of valid immediate commands for each instrument is available in its commands list or user's guide.

Buffered Command

Buffered commands send instructions to an instrument. These commands are executed one at a time. Each command is a string of no more than 40 characters.

A list of valid buffered commands for each instrument is available in its commands list or user's guide.

Insert an Immediate Command

There are two ways to insert an immediate command in Advanced mode.

Using the Edit Menu

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type a Command and Comment. (The comment is optional.)
3. Select **Insert Immediate** from the **Edit** menu. The new command will be inserted at the bottom of the command list.

NOTE	**The command will not be inserted if there is already a command line in the list with the same Unit ID and command.**

Using the + Button

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type a Command and Comment. (The comment is optional.)
3. Click the button next to the Immediate button. The new command will be inserted at the bottom of the command list.

NOTE The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Insert a Buffered Command

There are two ways to insert a buffered command in **Advanced** mode.

Using the Edit Menu

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type a Command and Comment. (The comment is optional.)
3. Select **Insert Buffered** from the **Edit** menu. The new command will be inserted at the bottom of the command list.

NOTE The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Using the + Button

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type a Command and Comment. (The comment is optional.)
3. Click the button next to the **Buffered** button. The new command will be inserted at the bottom of the command list.

NOTE The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Send an Immediate Command

Basic Mode

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type (or select) a Command.
3. Click Immediate.

Advanced Mode

USING THE BUTTON

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type a Command and Comment. (The comment is optional.)
3. Click Immediate.

USING EXECUTE FROM THE EDIT MENU

1. Highlight the command to be sent in the command list.
2. Choose **Selection** from the **Edit** menu and select **Execute**. (Alternatively, type Ctrl + E.)

USING THE COMMAND LIST

Double-click on the command line of the command to send.

Send a Buffered Command

Basic Mode

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type (or select) a Command.
3. Click .

Advanced Mode

USING THE BUTTON

1. From the **Unit ID** drop-down box, select the unit ID of the instrument to which the command will be sent.
2. Type a Command and Comment. (The comment is optional.)
3. Click .

USING EXECUTE FROM THE EDIT MENU

1. Highlight the command to be sent in the command list.
2. Choose **Selection** from the **Edit** menu and select **Execute**. (Alternatively, type Ctrl + E.)

USING THE COMMAND LIST

Double-click on the command line of the command to send.

402 Pump Dual with Tee/VERITY 4120 Dual with Tee Syringe Pump Operation

The 402 Dual with Tee and VERITY 4120 Dual with Tee syringe pumps are uniquely designed syringe pumps that allow for two different syringe sizes to function as one syringe pump.

For the syringe pump to function properly, the following will be true:

- The left syringe capacity is greater than the right syringe capacity.

The following describes how the syringes work together:

Aspirate (Tray)

- The valve must be in the probe position.
- The right syringe will be used if the requested volume is less than 95% of the right syringe capacity. Held volume is considered.
- The left syringe will be used if the requested volume is 95% or greater than the right syringe capacity.

Aspirate (Reservoir)

- The valve must be in the reservoir position
- The left syringe will be used.

Dispense

- The right syringe will be used if the requested volume is less than 95% of the right syringe capacity. Held volume is considered.
- The left syringe will be used if the requested volume is 95% or greater than the right syringe capacity.

Compressibility

The following table provides the compressibility values for some common mobile phase solvents.

Compressibility

	INSTRUMENT			
	30X-SERIES PUMPS		32X- AND 33X-SERIES PUMPS	
SOLVENT	TEMPERA-TURE (ºC)	COM-PRESS-IBILITY	TEMPERA-TURE (ºC)	COMPRESSIBILITY

WATER	20	46	20–23ºC	34
	25	46		
	30	45		
	40	45		
METHANOL	20	121–123	20–23ºC	162
	25	125–127		
	30	129–130		
	40	138		
BENZENE	20	94–95	20–23ºC	
	25	96–97		
	30	101–103		
	40	110		
CHLOROFORM	20	97–101	20–23ºC	204
	25	97		
	30	108–110		
	40	118–119		
METHYLENE CHLORIDE	25	97	20–23ºC	
CARBON TETRACHLORIDE	20	103–105	20–23ºC	
	25	106–108		
	30	112–113		
	40	120–122		
ETHANOL	20	110–112	20–23ºC	148
	25	114–116		
	30	118–119		
	40	126–127		
ACETONE	20	126–127	20–23ºC	
	25	124		
	30	133		
	40	144–156		
N-HEPTANE	20	140–145	20–23ºC	270
	25	142–149		
	30	150–155		
	40	160		
N-HEXANE	20	150–165	20–23ºC	290
	25	161–171		
	30	165–180		
	40	183		

DICHLORO-METHANE			20–23ºC	200
DIETHYL ETHER	20 25 30	184–187 195–200 208–209	20–23ºC	
ACETONITRILE		99	20–23ºC	180
TETRAHYDRO-FURAN		93	20–23ºC	150
ISOPROPANOL			20–23ºC	162
WATER-METHA-NOL, 10-90		117	20–23ºC	130
WATER-METHA-NOL, 20-80		86	20–23ºC	110
WATER-METHA-NOL, 30-70			20–23ºC	92
WATER-METHA-NOL, 40-60		56	20–23ºC	73
WATER-METHA-NOL, 50-50		52	20–23ºC	55
WATER-METHA-NOL, 60-40		46	20–23ºC	46
WATER-METHA-NOL, 70-30			20–23ºC	43
WATER-METHA-NOL, 80-20		40	20–23ºC	40
WATER-METHA-NOL, 90-10			20–23ºC	37
WATER-ACETO-NITRILE, 10-90			20–23ºC	146
WATER-ACETO-NITRILE, 20-80			20–23ºC	123
WATER-ACETO-NITRILE, 30-70			20–23ºC	103
WATER-ACETO-NITRILE, 40-60			20–23ºC	82
WATER-ACETO-NITRILE, 50-50			20–23ºC	62
WATER-ACETO-NITRILE, 60-40			20–23ºC	52
WATER-ACETO-NITRILE, 70-30			20–23ºC	48
WATER-ACETO-NITRILE, 80-20			20–23ºC	42
WATER-ACETO-NITRILE, 90-10			20–23ºC	36

Flow Rates

Syringe Pumps

The following table provides suggested flow rate values by instrument and syringe size.

	215 LIQUID HANDLER		402 PUMP SINGLE/DUAL/DUAL WITH TEE		VERITY SYRINGE PUMPS AND GX SYRINGE PUMP	
	0.0002	3.3	0.0001	4	0.001	4
	0.0004	8.4	0.001	10	0.001	10
	0.001	16	0.001	20	0.01	20
	0.002	33	0.01	40	0.01	40
	0.01	100	0.01	100	0.01	100
	0.02	100	0.01	100	0.1	100
	0.1	100	0.1	100	0.1	100

GX Analytical Solvent System

The suggested minimum flow rate is 0.001 mL/min. The maximum flow rate is 5 mL/min.

GX Prep Solvent System

The suggested minimum flow rate is 0.001 mL/min. The maximum flow rate is 50 mL/min.

How to Calculate Fraction Collection Delay Volume

Delay Volume is the volume in the flow path between the detector flow cell outlet and the inlet of the fraction collection valve.

Contact your local Gilson representative for help determining the value to enter for the system configuration.

Purification System with MS Detector Fraction Collection Delay Volume

For a configuration in which a channel on an MS detector is the primary channel (for fraction collection), the fraction collection delay volume must be calculated using the following equation:

Fraction Collection Delay Volume = Fraction Collection Delay Volume (determined by your local Gilson representative) + [Time needed to align MS peaks with UV peaks * Mobile Phase Flow Rate]

Recommended Scan Range (High m/z - Low m/z)

Refer to the following table when setting the scan range for the Flexar SQ 300 MS Detector. Gilson recommends that the difference between the high end of the scan range and the low end of the scan range not exceed the values below.

DATA RATE (DATA POINTS PER SECOND)	SCAN WITHOUT SIM CHANNELS	SCAN WITH SIM CHANNELS
10	357 m/z	242 m/z
5 (Default)	714 m/z	515 m/z
2	1785 m/z	1321 m/z

Operators

Refer to the following table for an overview of the operators available for use in the Task Builder. For more information on how to use this feature, contact techsupport@gilson.com.

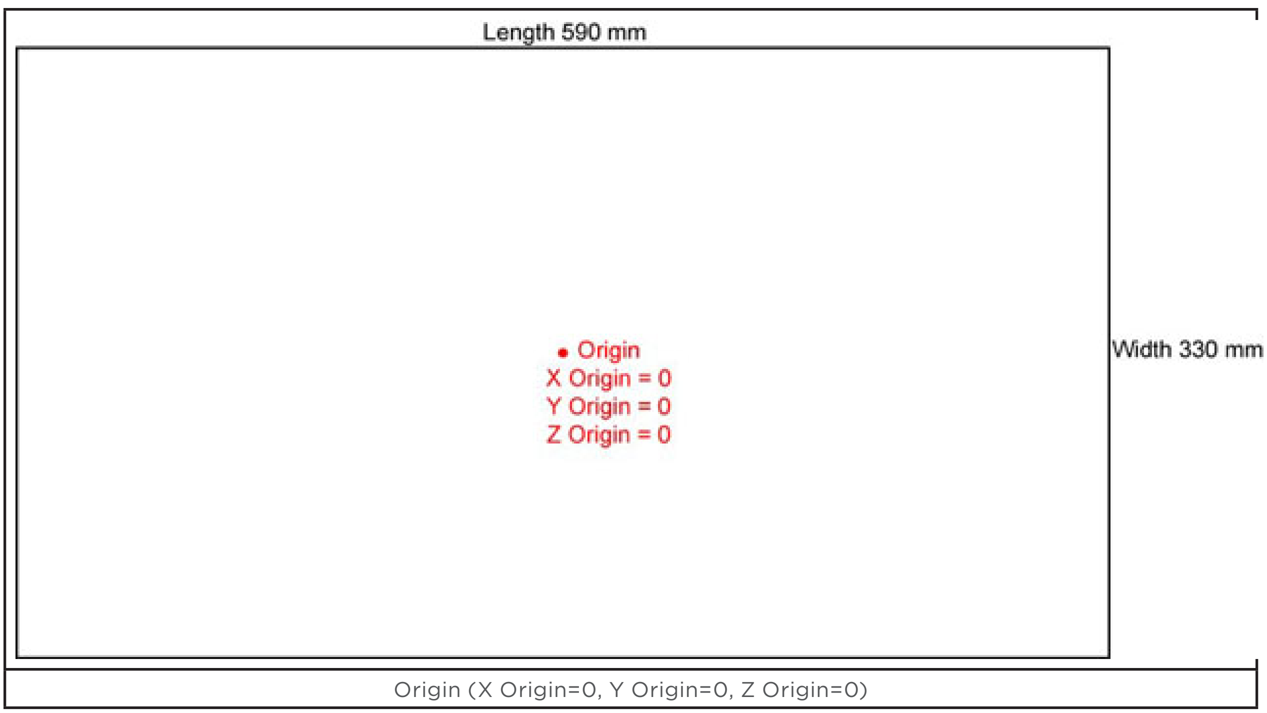
ICON	NAME	DEFINITION
	Variable	Opens a simplified view of the **Variable Properties** dialog for the purpose of creating a variable. For information about creating and using variables, refer to Working with Variables.
	Expression	Allows values to be assigned to variables within a task. The value may be an explicit assignment, or may be the result of a calculation.
	String Manipulator	Provides a mechanism for performing advanced string manipulation operations, such as extracting or replacing strings. This operator is useful when working with information obtained from GEARS devices. The following manipulators are available: Concatenate – Append two strings into a single string Contains – Search a string for the occurrence of a string Insert – Insert a string into a string at a specific location IndexOf – Find the position of a string within a string Length – Get the length of a string Remove – Remove a string from a specific location in a string Replace – Replace all instances of a string in a string Substring – Get a string from a string ToLower – Convert a string to lower case ToUpper – Convert a string to upper case
	If..EndIf	Provides a mechanism for entering a conditional expression, and creates a container for placing commands, operators, or tasks to be executed if the conditional expression evaluates to TRUE.
	If..Else..EndIf	Provides a mechanism for entering a conditional expression, and creates two containers for placing commands, operators, or tasks, one of which is executed depending on whether the conditional expression evaluates to TRUE or FALSE.

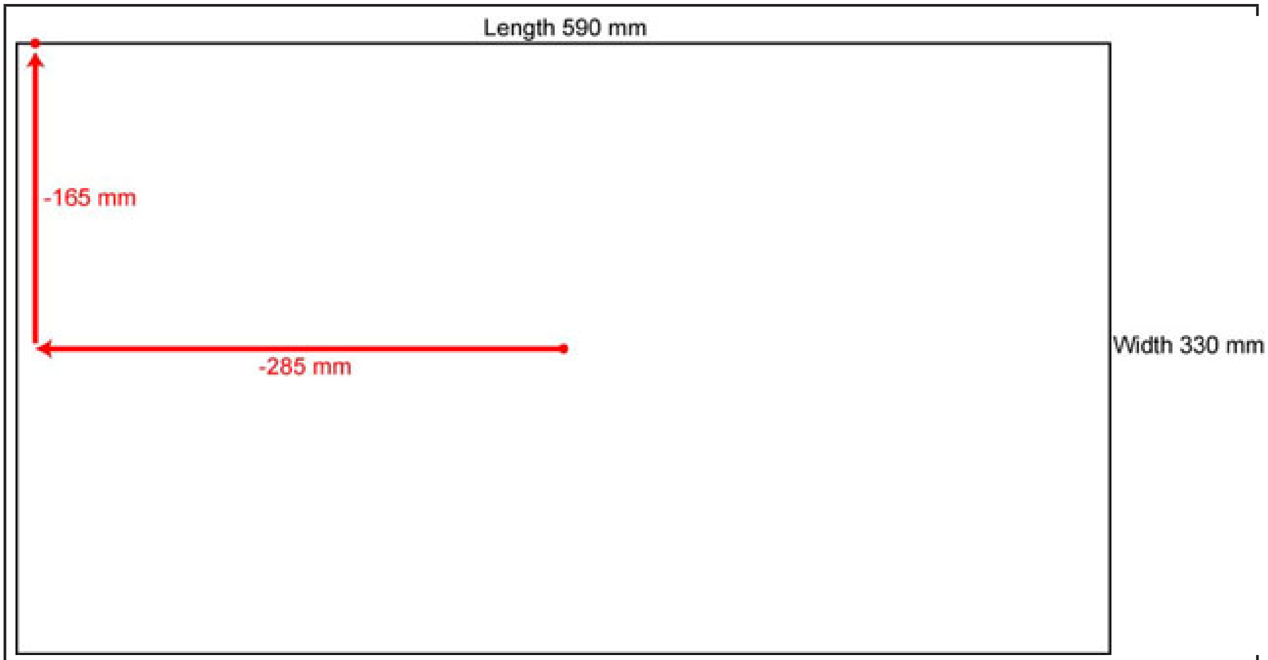
OPERATORS CONTINUED ON PAGE 727

ICON	NAME	DEFINITION
	Do Only In	Creates a container for placing commands, operators, or tasks, which will be executed only in the circumstance specified within the operator (for example, executing a **Prime Task** in the **First Method Iteration** only). Tasks, commands, and operators within the **Do Only In** container will be executed per the option selected. The following options are available: First Method Iteration Last Method Iteration Volume To Aspirate First Intelligent Itn Last Intelligent Itn
	Loop	Creates a container for placing commands, operators, or tasks, which will be executed in succession for the specified number of loop iterations (Loop Count).
	Label	Creates a location within a task or method that can be referenced by a **Goto Operator** within the same task or method.
	Goto	Instructs the task or method to continue operation at the location of the specified Label within the same task or method.

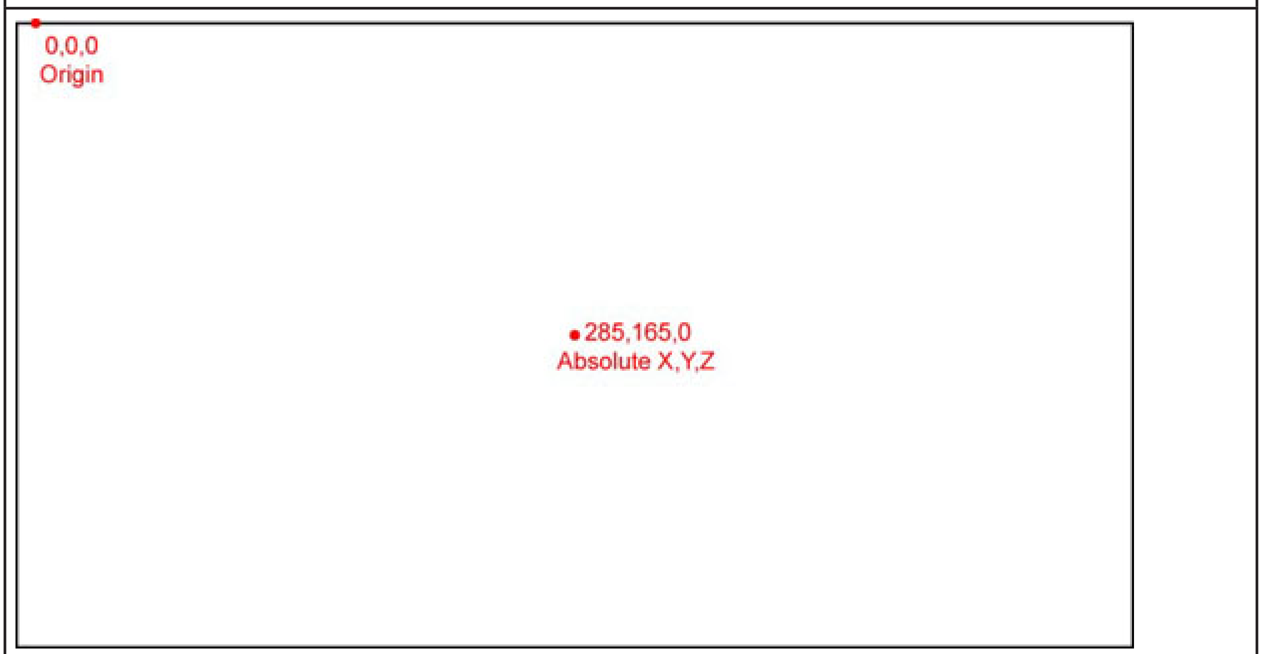
Origin

The origin is a reference used when creating custom templates using the Bed Layout and Utilities. For more information, refer to How to Create a Template.





Move X-285 and Y-165



Origin (Default Settings Applied)

Icons

The following are icons that appear several places in the software. Refer to the table below for a description of the function of each.

ICON	DESCRIPTION
	Select all
	Clear all
	Invert selection

Zoom

- To zoom, toggle the **Auto Scale** selection off.
- To zoom in, click once or repeatedly. The software will zoom in to the center of the cross hairs. Move the cross hairs by scrolling the window.
- To zoom out, click once or repeatedly.
- To zoom to a specific scale factor, enter the number in the **Scale Factor** field.