TRILUTION® LH Software

USER'S GUIDE

V4.0

www.gilson.com/ContactUs

GILSON®

LT381065-01 |

Table of Contents

TRILUTION® LH SOFTWARE OVERVIEW

TRILUTION LH Software is software for controlling automated liquid handling instruments.

Its innovative features include:

- simple drag-and-drop method creation
- extensive flexibility in methods and tasks through the use of variables and operators
- integrated customization to create racks and tasks
- graphical application simulation to ensure the functionality and reliability of the application prior to use with precious samples
- easy integration with third-party software applications and hardware (using GEARS)

Click the links for descriptions of the two main menus, Liquid Handling and Administrative Tools.

Customer Service

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

If you need assistance, please contact your local Gilson representative. Specific contact information can be found at www.gilson.com.

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 LH

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

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

LOG IN

In the TRILUTION LH Log In window, do the following:

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 Click **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 **Gilson Applications>TRILUTION LH Help**.
- Move the mouse cursor over a button in the software. A tooltip appears with text that describes what the button does.
- Click 

to display help for the dialog or task property page.
- Click  to display help about the window.
- Click  to display "How To" help topics (accessible from the menus).
- Click **Show** in an open help topic to display the Contents tab.

TRILUTION LH Menus

TRILUTION LH MENUS

TRILUTION LH has two main menus: Liquid Handling and Administrative Tools.

Click  in the lower right corner of any builder to bring forward the screen for accessing these menus.

LIQUID HANDLING

Liquid Handling

Use the options in this menu to create and run your application.

The Liquid Handling menu options are:

- Application
- Method
- Task
- Utilities
- Reports
- About

Application

Click to open the Application builder.

The Application builder allows you to create a sample list and run an application.

For more information about the Application builder, see Application.

Method

Click to open the Method Builder.

A method includes a configuration, a bed layout, and a sequence of tasks to execute.

For more information about the Method Builder, see Method Builder.

Task

Click to open the Custom 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 about the Custom Task Builder, see Custom Task Builder.

Utilities

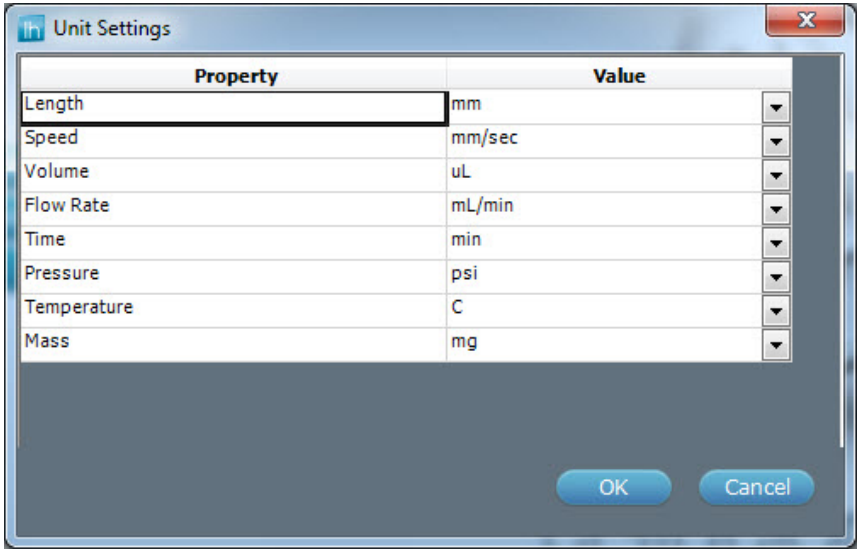
Utilities

Click to access the Utilities menu with options for setting units, viewing run results, purging or recovering deleted items, creating custom bed layout elements, registering TRILUTION LH, and enabling ERM.

The Utilities menu options are:

- Unit Settings
- Run Results
- Purge and Recover
- Bed Layout and Utilities
- Register
- ERM

Unit Settings



Click 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
Length	mm, cm
Speed	cm/sec, mm/hr, mm/min, mm/sec
Volume	mL, nL, µL
Flow Rate	mL/hr, mL/min, mL/sec, µL/min, µL/sec
Time	hrs/min/sec
Pressure	psi, MPa, Bar
Temperature	C, F, K
Mass	mg, µg

Run Results

Click to open the Run Results window.

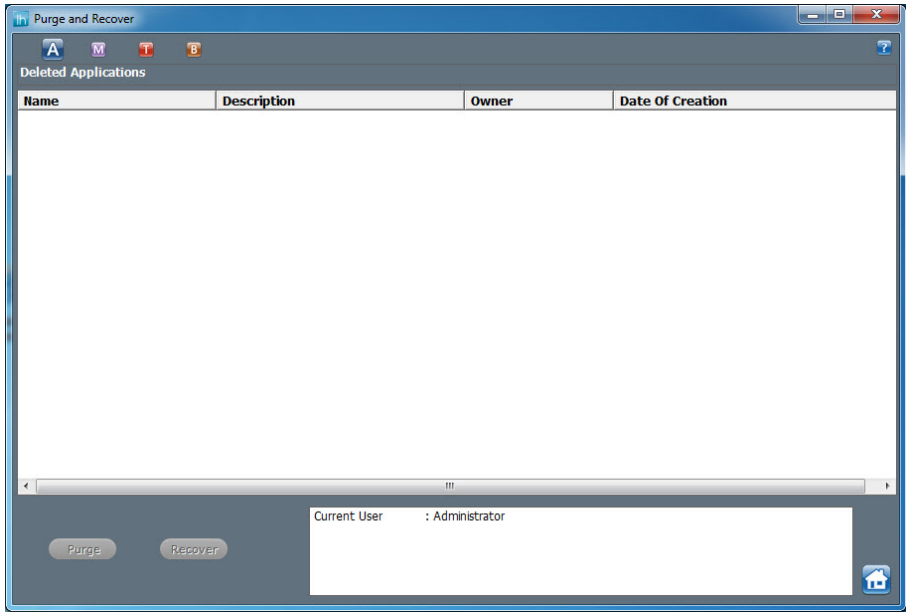
Use the Run Results window to review application run and/or simulation run results. The Run Results window provides the ability to view, export, archive, restore, and refresh the application run and/or simulation run results.

For more information, see Run Results Window.

Purge and Recover

Click 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.

NOTE	Close the Application window before attempting to recover an application.

Bed Layout and Utilities

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

For more information, see Bed Layout and Utilities.

Register

Click to open the Registration utility.

The Registration utility enables registering for a licensed version of TRILUTION LH.

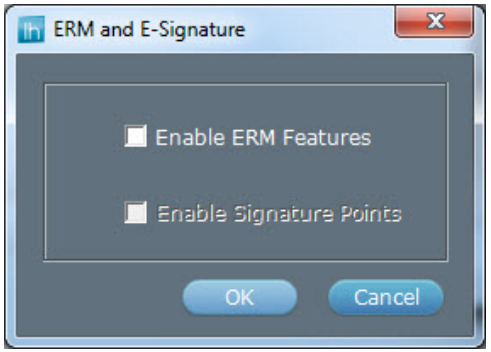
ERM

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

The implementation of an Electronic Record Management (ERM) system can be complex. TRILUTION LH can assist in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management. 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, see Electronic Record Management (ERM) Features.



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. TRILUTION LH defaults with this box cleared (ERM features disabled).

TRILUTION LH 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. The 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 click **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.

Reports

Click to open the Reports window for generating the following report types: Task, Method, Application, Run, and Sample Tracking.

For more information about Reports, see Reports.

About

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

ADMINISTRATIVE TOOLS

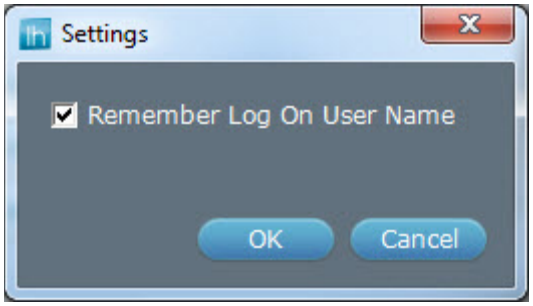
Administrative Tools

The Administrative Tools menu options are:

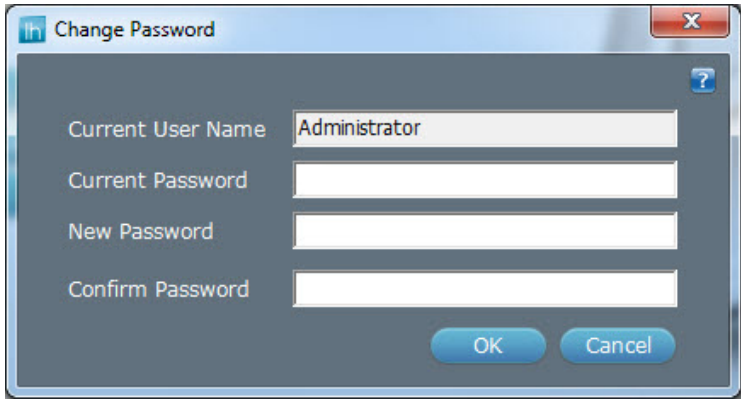
- **User Settings:** Choose whether TRILUTION LH should remember the username for the last logged in user; see User Settings.
- **Change Password:** Change passwords; see Change Password.
- **Users and Groups**: Create or modify Users and Groups; see Users and Groups.

User Settings

When selected, TRILUTION LH will remember the username for the last logged on user. It is selected by default.



Change Password

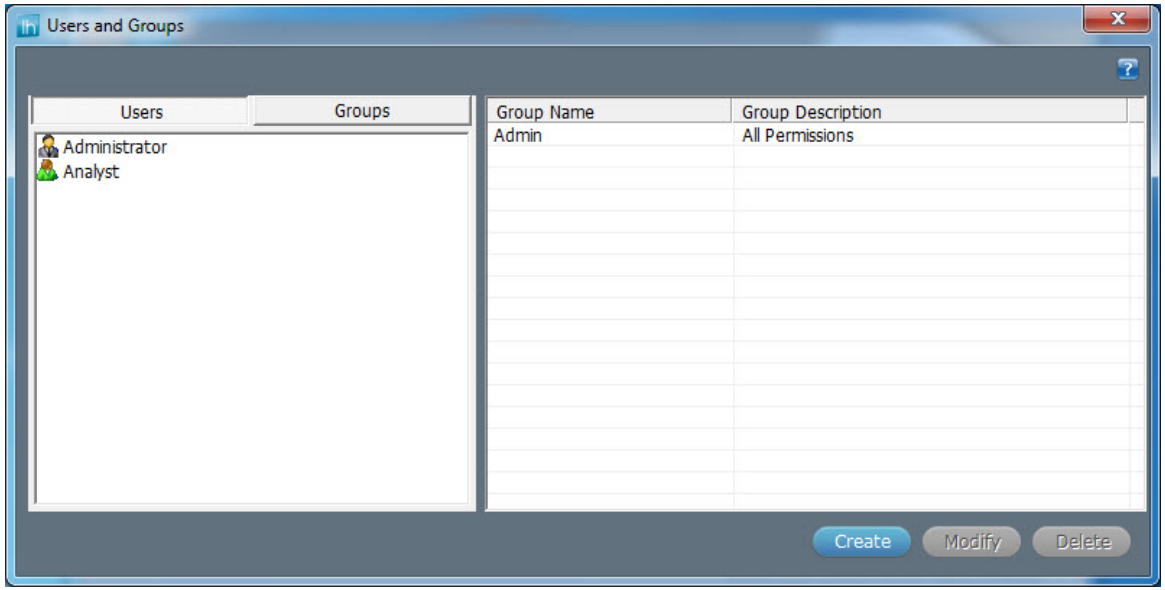


A member of the default Admin group provides the user name and the default password. Optionally, log in to the software and then change your password from the Administrative Tools menu.

1 On the main menu, click **Administrative Tools**.
2 On the Administrative Tools menu, click **Change Password** to display the Change Password window.
3 On the Change Password window, do the following:
   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.
   d) In the Confirm Password field, type the new password again.
   e) Click **OK**. The password is changed.

NOTE	Password is case sensitive and has a 20-character limit.

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.

During the TRILUTION LH 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 TRILUTION LH.

To open Users and Groups:

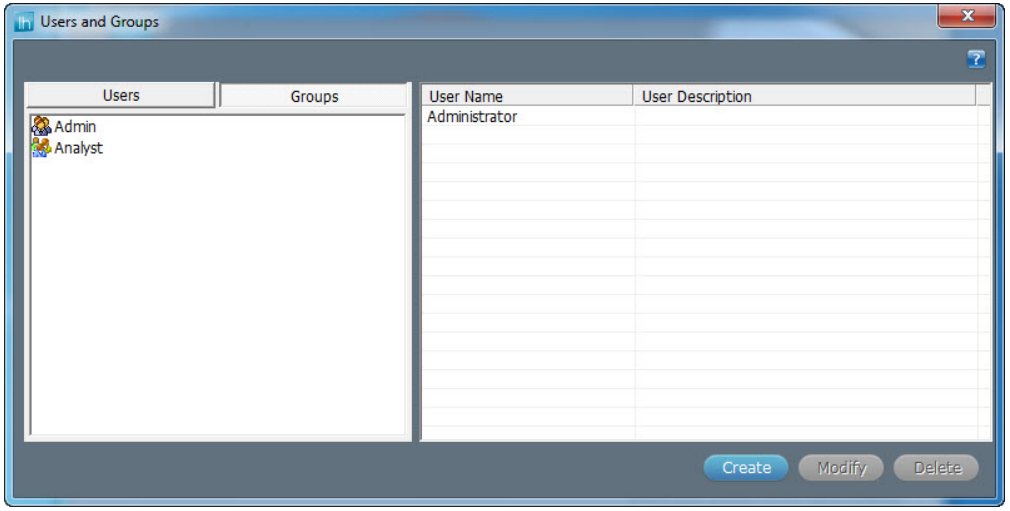
1 On the TRILUTION LH menu, click **Administrative Tools**.
2 On the **Administrative Tools** menu, click **Users and Groups** to display the Users and Groups window.

The Users and Groups window has two frames:

- The left frame provides two sections:
  a) Users: Create and modify Users.
  b) Groups: Create and modify Groups.
- The right frame displays the information based on the Tab selected:
  a) On selecting the Users tab, the Group name and Group description display.
  b) On selecting the Groups tab, the User Name and User Description display.

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, and delete Groups. On selecting a Group from the group tab, the Users belonging to that Group display in the right frame.

For information about creating users, see Users.

How to Create a Group

1 On the Users and Groups window, click **Groups** tab. The name of the default Groups 'Admin' and 'Analyst' display in the left frame.
2 Click **Create** to create a new Group. The Create Group window appears.
3 In the Create Group window, do the following:
   a) In the Group Name field, type a Group Name.
   b) In the Group Description field (optional), type a brief Group description.
   c) In the Permissions frame, select the permissions for the various builders.
   d) Click **OK**. The new Group displays under 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 display in the right frame and the **Modify** button is enabled.
2 Click **Modify**. The Modify Group window appears.
3 In the Modify Group window, make the required changes and click **OK**.

Delete a Group

1 In the **Groups** tab, select a Group and click **Delete**. A delete confirmation dialog box appears.
2 Click **Yes**. The selected Group is deleted.
Note: The Admin group cannot be 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 name(s) and description(s) for the User display in the right frame.
2 Click **Modify**. The Modify User window displays.
3 In the Select the Group section, click **View Permissions**.
   a) When multiple Groups are selected, TRILUTION LH displays a combination of all Group permissions.
   b) When one Group is selected, TRILUTION LH displays permissions for that specific Group.
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), enter a brief description of the Group.
   c) In the Permissions table, the permissions assigned to the group for the builders.
   d) Click **OK**.

NOTE	Click Cancel in the Modify User window to avoid saving Group changes to the User.

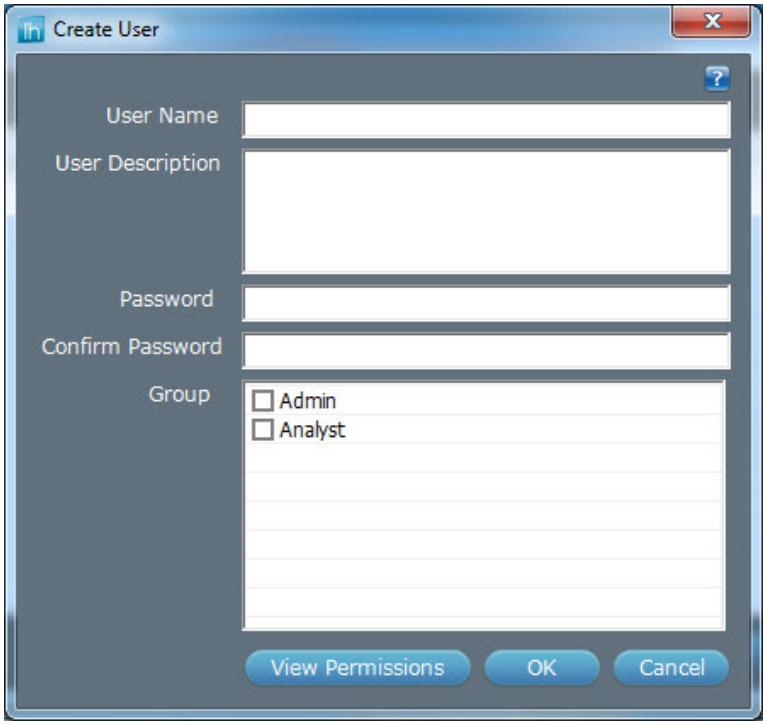
Users

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, see Groups.

How to Create a User



1 On the Users and Groups window, click the **Users** tab. The default Users 'Administrator' and 'Analyst' display with their Group name in the right window.
2 Click **Create**. The Create User window appears.
3 On the Create User window, do the following:
   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 your password.
   d) In the Confirm Password field, type your password for confirmation.
   e) In the Select the Group section, select the Group(s) the User is assigned to.
4 Click **OK**.

Modify User Properties

1 On the **Users** tab, select a User. The assigned Group name(s) and description(s) for that User display in the right frame.
2 Click **Modify**. The Modify User window displays.
3 In the Modify User window, you can do the following:
   a) In the User Description field (optional), change the description.
   b) In the Password field, type a new password.
   c) In the Confirm Password field, type the new password for confirmation.
   d) In the Select the Group section, 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 click **Delete**. A delete confirmation dialog box appears.
2 Click **Yes**. The selected User is deleted.

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 TRILUTION LH

1 On a menu, click the Lock button  to display the Confirm Lock window.
2 On the Confirm Lock window, click Lock to display the Unlock TRILUTION LH window.

UNLOCK TRILUTION LH

1 On the Unlock TRILUTION LH window, in the **Password** field, type the password.
2 Click **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 LH database (adds device specific commands for use within the Custom Task Builder and provides a device which may be inserted into method configurations).

Property Page Creator

The Property Page Creator is used to create task property pages for custom tasks. Tasks often have many properties (variables) to set. A task property page allows variables to be grouped and organized to make setting task properties less complicated.

The Property Page Creator installer is installed with TRILUTION LH.

TRILUTION LH Backup Utility

The TRILUTION LH Backup Utility, installed with TRILUTION LH Software, is used to make backup copies of the database, which can be restored, if desired.

Close TRILUTION LH

Click  on the main menu.

METHOD BUILDER

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

Key concepts to learn about the Method Builder are:

- How to Save a Method
- How to Export Methods
- How to Import Methods

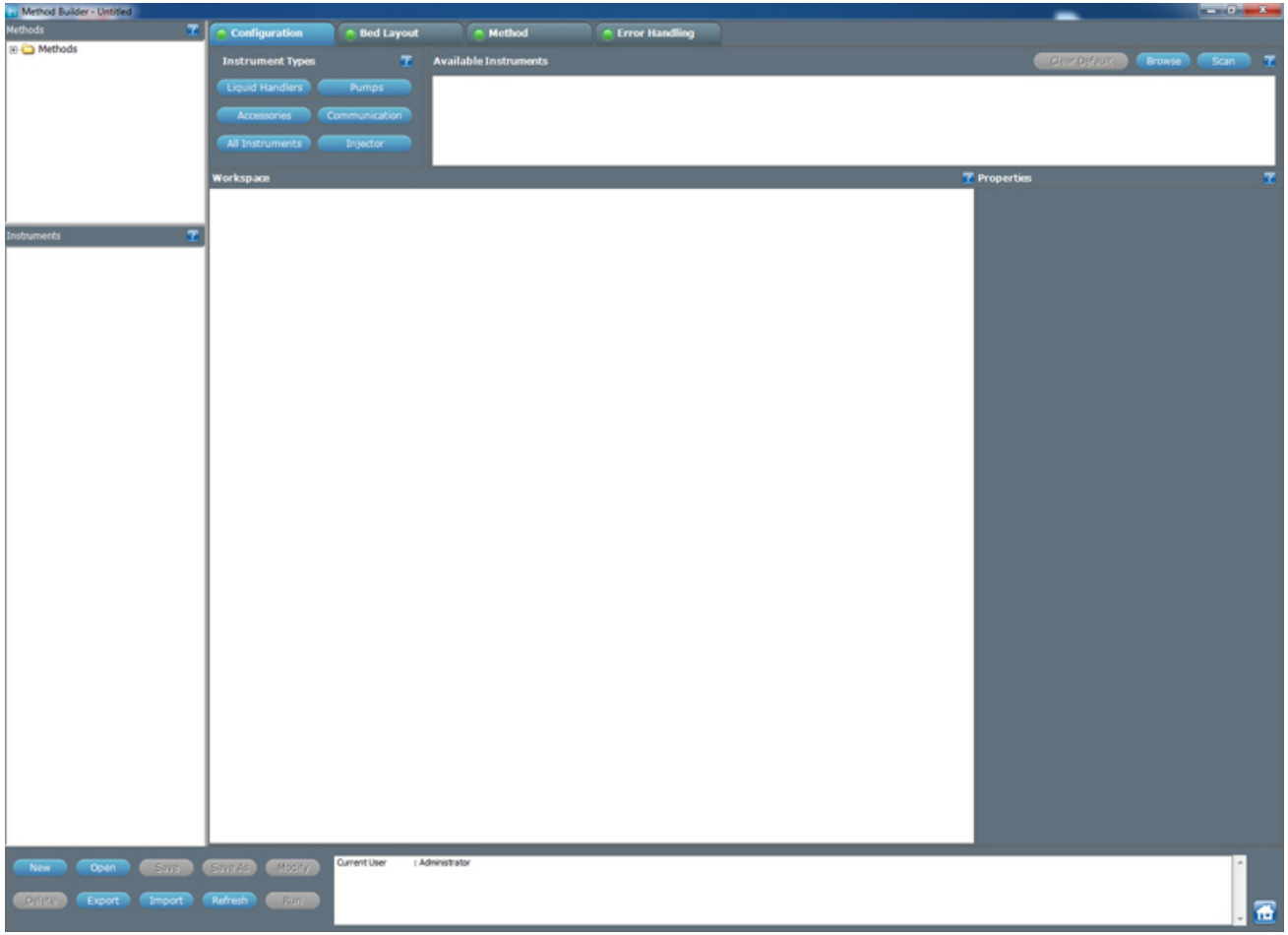
Method Builder Window

METHOD BUILDER WINDOW

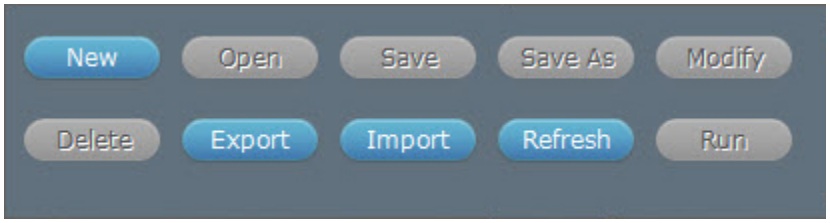
Using the options in the Method Builder, specify a configuration, a bed layout, and a sequence of tasks to execute.

The Method Builder window includes the following:

- Action Buttons
- Configuration Tab
- Bed Layout Tab
- Method Tab
- Error Handling Tab
- Methods Palette
- Info Window



ACTION BUTTONS



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

ACTION BUTTON	DESCRIPTION
New	Create a new method. For more information, see How to Create a Method.
Open	Open an existing method. For more information, see View a Method.
Save	Save an existing method to the same name. Optionally, modify the Configuration, Bed Layout Name, or Error Name and specify the Configuration or Error Name as default. For more information, see How to Save a Method.
Save As	Save a new method or save an existing method to a new name. Optionally, type a description or modify the Configuration, Bed Layout Name, or Error Name and specify the Configuration or Error Name as default.
Modify	Modify the description for the method.
Delete	Deletes the open method or all versions of the method. For more information, see Delete a Method.
Export	Exports the method to a specified location as a .LHME file. For more information, see How to Export Methods.
Import	Imports a .LHME file, lists the method in the Methods palette, and replaces it in the application. For more information, see How to Import Methods.
Refresh	Allows you to reload the Tasks palette with any new tasks created. It allows for updating the builder with the latest tasks and showing any changes to the unit settings. Refresh after deleting and before adding new instruments.
Run	Opens the Application builder. For more information, see Application.

CONFIGURATION TAB

For details about this tab and how to create a configuration, see Method Builder - Configuration.

BED LAYOUT TAB

For details about this tab and how to create a bed layout, see Method Builder - Bed Layout.

METHOD TAB

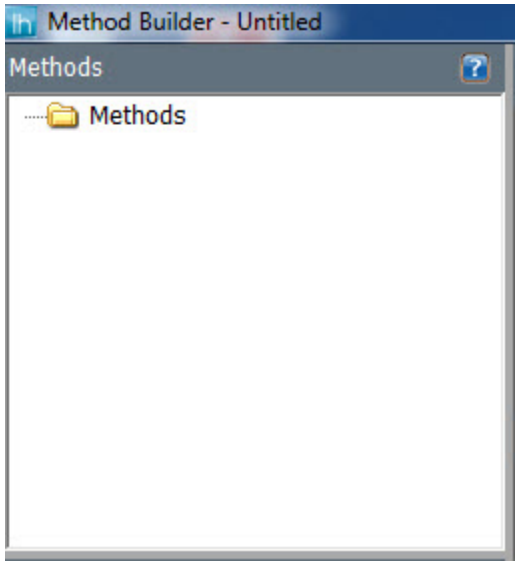
For details about this tab and how to add tasks to a method, see Method Builder - Method.

ERROR HANDLING TAB

For details about this tab, see Method Builder - Error Handling.

METHODS PALETTE

This palette lists the methods.



Right-click Menu

Methods Palette

Right-click in the Methods palette and the following options are displayed:

MENU	DESCRIPTION
Create Folder	Displays the New Folder dialog for creating a new top-level folder.
New Method	Create a new method.

Folder

Right-click on a folder in the Methods palette and the following options are displayed:

MENU	DESCRIPTION
Create Folder	Displays the New Folder dialog for creating a new folder in the current folder.
Rename Folder	Rename the current folder.
Delete Folder	Deletes the folder if empty.

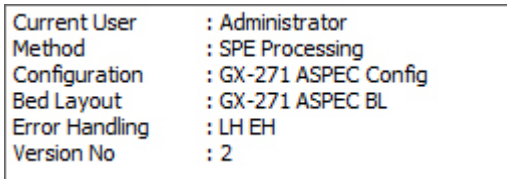
Method

Right-click on a method and the following options are displayed:

MENU	DESCRIPTION
New Method	Create a new method.
Open Method	Open an existing method.
Delete Method	Deletes the selected method or all versions of the method.
Copy Method	Copies the method for pasting in another folder.

INFO WINDOW

Lists information about the open method, including the configuration and bed layout names (if applicable), and the name of the current user.



How to Save a Method

When finished creating the method:

1 Click **Save** to display the Save Method window.
2 On the Save Method window, do the following:
   a) In the **Name** field, type a unique Method name.
   b) In the **Configuration Name** field, type a configuration name. Optionally, select the Set as Default check box to set this configuration as the default for all new methods.
   c) In the **Bed Layout Name** field, type a bed layout name. If the configuration was set as default, this will be the default bed layout associated with that configuration.
   d) In the **Error Handling Name** field, type a name for the error handling parameters (if the method has error handling parameters). Optionally, select the Set as Default check box to set these parameters as the default for all new methods.
   e) In the **Description** field, (optional), type a brief description of the method.

NOTE	The following special characters are not permitted in names or descriptions: ampersand (&), apostrophe (‘), back slash (\), colon (:), comma (,), forward slash (/), greater than (>), less than (<), period (.), pipe (|), question mark (?), and asterisk (*).

After the method has been saved, the Run button becomes active. Click **Run** to open the Application Builder. For more information, see Application.

View a Method

1 In the Method Builder, do either of the following:
- On the Methods palette, do either of the following:
  - Double-click a method.
  - Right-click on a method and then on the submenu displayed, click **Open Method**.
- Click **Open** to display the Open Method window.
  Clear the Show Latest Versions check box to see all versions of all methods in the current database.

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

How to Export Methods

1 On the Method Builder, click **Export**. The Select items to Export window displays all the available methods.

2 In the Select items to Export window, complete the following:

a) In the Select the items to be exported field, select the methods.

b) In the Select a path field, do one of the following:
- Accept the default path of **C:\Documents and Settings\OS User Name\My Documents\TRILUTION LH x.x\Export**.
- Click  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 Click **OK**. On completion of the export operation, the method (with its embedded tasks) is saved in the specified folder with a .LHME extension.

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

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

How to Import Methods

1 In the Method Builder, click **Import** to display the Select Method Exported Files window.
2 On the Select Method Exported Files window, complete the following:
   a) Browse for and select the Method Export files.
   b) Click **Open**. Some or all of the following dialogs will appear:
      - 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.
      - If a method or method component (configuration, bed layout, or error handling) with the same name already exists on the system, a dialog appears with options for importing the method and components. Enter a new name for the method or leave the current name to overwrite the existing method.

        If the method components are the same as the existing, the name is shown, but cannot be changed. If a difference is detected, enter a new name for the component or leave the current name to overwrite the existing component.
      - A dialog appears with an option to select a folder in which to save the method to or select a folder to which all methods from the import operation will be saved. A new folder can be created from this dialog.
3 When the import success/fail dialog appears:
   - Click **Details** to view the log information of the import operation.
   - Click **OK**.

Delete a Method

1 On the Methods palette, do one of the following:
   - Select a method and then right-click to view the submenu. On the submenu, click **Delete**.
   - Open a method and then on the action bar, click **Delete**.

   A Delete confirmation dialog box appears.
2 On the Delete confirmation dialog box, do one of the following:
   - Click **Yes**. The Method is deleted.
   - Select the Delete All Versions check box and then click **Yes**. All versions of the method are deleted.
3 Optionally, delete the method permanently using the Purge and Recover utility.

Close the Method Builder

In the Method Builder, do one of the following:

- Click  in the lower right corner of the Method Builder to bring forward the main menu.
- Click  in the upper right corner of the Method Builder to close the builder.

METHOD BUILDER - CONFIGURATION

Configuration Tab Window

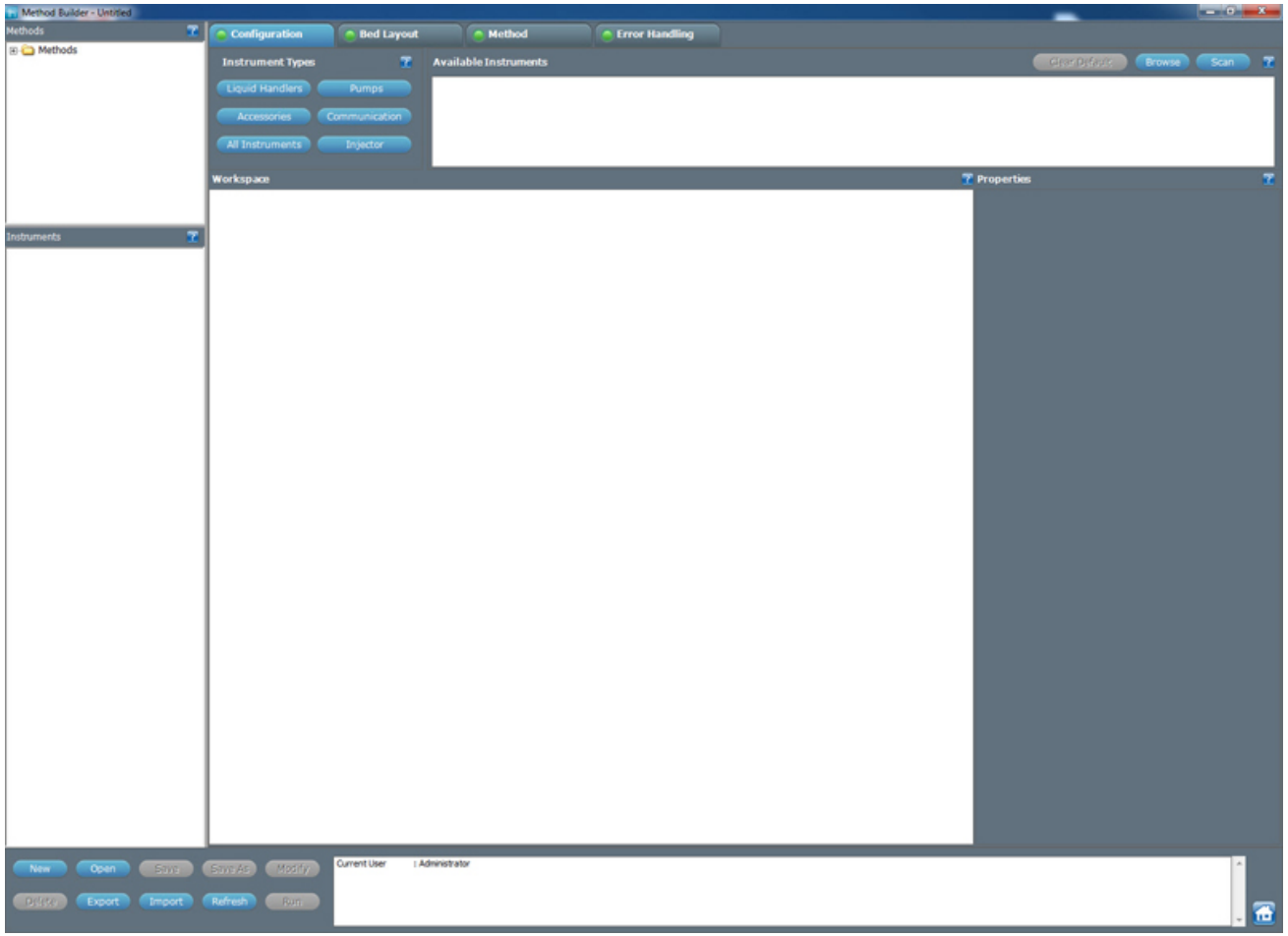
CONFIGURATION TAB WINDOW

The Configuration tab window is a graphical interface used to create a configuration.

The Configuration tab window includes the following:

- Instrument Types
- Available Instruments
- Workspace
- Properties
- Instruments Palette

For information about how to create a configuration, see How to Create a Configuration.



INSTRUMENT TYPES

Lists the available instrument groups.

For information about how to create a configuration, see How to Create a Configuration.

AVAILABLE INSTRUMENTS

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

For information about how to create a configuration, see How to Create a Configuration.

WORKSPACE

Area used to create or view a configuration.

For information about how to create a configuration, see How to Create a Configuration.

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.

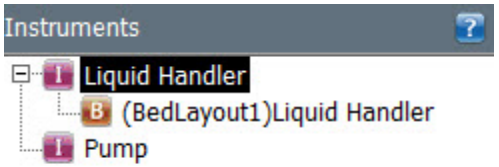
The set of properties for an instrument may include one or more of the following tabs:

TAB	DESCRIPTION
Setup	Provide specific information about the instrument to the software.
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.

The instrument types are:

- Liquid Handlers
- Accessories
- Pumps
- Communication
- Injector

INSTRUMENTS PALETTE



This palette is used to provide information and for navigation. Information provided is dependent on the instrument type.

INSTRUMENT TYPE	INFORMATION PROVIDED
Liquid Handlers	Lists bed layout. Can navigate to the Bed Layout tab by clicking the bed layout name.
Pumps	Used only for navigation. Click on the instrument name to view the property page for that instrument.
Accessories	Used only for navigation. Click on the instrument name to view the property page for that instrument.
Communication	Used only for navigation. Click on the instrument name to view the property page for that instrument.
Injector	Used only for navigation. Click on the instrument name to view the property page for that instrument

For information about how to create a configuration, see How to Create a Configuration.

For information about the instruments palette as it relates to the Bed Layout tab, see Instruments Palette.

How to Create a Configuration

HOW TO CREATE A CONFIGURATION

1 In the Method Builder, select the Configuration tab.
2 Do one of the following:
- From the Instrument Types, select an instrument group (Liquid Handlers, Pumps, Accessories, Communication, Injector, or All Instruments). The instruments in that group are listed in the Available Instruments window.
- Click **Scan**. The software searches for Gilson GSIOC or Ethernet instruments and GEARS devices.
- Click **Browse**. Select an existing configuration and then click **OK**.

3 From the Available Instruments window, drag an instrument and then drop it in the workspace.

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

LIQUID HANDLERS

	215 Liquid Handler		GX-271 Liquid Handler without Pump
	215 Liquid Handler without Pump		GX-271 Prep Liquid Handler
	223 Sample Changer		GX-274 ASPEC without Pump
	GX-241 II ASPEC without Pump		GX-274 Liquid Handler without Pump
	GX-241 II Liquid Handler without Pump		GX-281 Analytical Liquid Handler

	GX-241 Liquid Handler without Pump		GX-281 Liquid Handler without Pump
	GX-271 Analytical Liquid Handler		GX-281 Prep Liquid Handler
	GX-271 ASPEC without Pump		Quad-Z 215

Liquid Handlers Properties

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
215 Liquid Handler			
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.
ID	A unique identifier to address the syringe on the liquid handler.	A	A

Syringe Name	A unique name to address the syringe on the liquid handler.	A	A
Size (µL)	The capacity of the installed syringe on the 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 syringe on the liquid handler. It is important for sample tracking.	Reservoir	N/A
Contacts	There are four outputs available (labeled 1, 2, 3, 4), four inputs available (labeled A, B, C, D), and one 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.	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

215 Liquid Handler without Pump

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.
Contacts	There are four outputs available (labeled 1, 2, 3, 4), four inputs available (labeled A, B, C, D), and one 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.	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

223 Sample Changer

Z Arm Type (mm)	This is the height of the Z-arm installed on the sample changer.	123 mm Z-Arm	56 mm Z-Arm, 123 mm Z-Arm, 183 mm Z-Arm
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	215	Range provided on-screen; calculated based on Z Clamp Height and Z Arm Type.
Contacts	There are four outputs available (labeled 1, 2, 3, 4), four inputs available (labeled A, B, C, D), and one 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.	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	0–19

GX-241 II ASPEC without Pump, GX-241 II Liquid Handler without Pump, GX-241 Liquid Handler without Pump

Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	5–135
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	121 (ASPEC) 120 (LH)	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″

24V Output	There are two 24V outputs available (labeled 1, 2). 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. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is Open.	N/A	N/A
Output	There are two outputs available (labeled 1, 2). 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. 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
Input	There are four inputs available (labeled A, B, C, D. 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. 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.	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. The serial number for the GX-241 II ASPEC without Pump is located beneath the large, rectangular opening and towards the rear of the instrument.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module. The serial number for the GX Direct Injection Module is located on its right side.	N/A	N/A

GX-271 Analytical Liquid Handler

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	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	0–260
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122	Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location at which the instrument home completes. (GX-271)	Rear	Front, Center, Rear
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	1.1	0.5, 1.1, 5.5
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe.	0	0–999999
GX Direct Inject Valve	Indicate the size of the injection valve installed.	Not Installed	Not Installed, 1/8", 1/16"
Waste	Indicate the solvent valve port to be used for waste.	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.	N/A	N/A
Output	There are two outputs available (labeled 1, 2). 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. 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	There are two 24V outputs available (labeled 1, 2). 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. 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	There are two inputs available (labeled A, B). 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.	N/A	N/A
Solenoid	There are two solenoids available (labeled 1, 2). Optionally, type a description for the solenoid.	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 solvent system.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A
GX-271 ASPEC without Pump, GX-274 ASPEC without Pump			
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	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.	187	0–260
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	187	Calculated based on Z Clamp Height and Probe Type.

GX Direct Inject Valve	Indicate the size of the injection valve installed. (GX-271 ASPEC without Pump)	Not Installed	Not Installed, 1/8″, 1/16″
Output	There are two outputs available (labeled 1, 2). 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. 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	There are two 24V outputs available (labeled 1, 2). 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. 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	There are two inputs available (labeled A, B). 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.	N/A	N/A
Solenoid	There are two solenoids available (labeled 1, 2). Optionally, type a description for the solenoid.	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. (GX-271 ASPEC without Pump)	N/A	N/A

GX-271 Liquid Handler without Pump

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	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	0–260
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122	Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location at which the instrument home completes.	Rear	Front, Center, Rear
GX Direct Inject Valve	Indicate the size of the injection valve installed.	Not Installed	Not Installed, 1/8", 1/16"
Output	There are two outputs available (labeled 1, 2). 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. 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	There are two 24V outputs available (labeled 1, 2). 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. 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	There are two inputs available (labeled A, B). 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.	N/A	N/A
Solenoid	There are two solenoids available (labeled 1, 2). Optionally, type a description for the solenoid.	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 Prep Liquid Handler

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.	175 mm Probe	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.	175	0–260
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	172	Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location at which the instrument home completes. (GX-271)	Rear	Front, Center, Rear
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	30	1.1, 5.5, 10.5, 30, 50
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe.	0	0–999999
GX Direct Inject Valve	Indicate the size of the injection valve installed.	Not Installed	Not Installed, 1/8", 1/16"
Waste	Indicate the solvent valve port to be used for waste.	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.	N/A	N/A
Output	There are two outputs available (labeled 1, 2). 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. 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	There are two 24V outputs available (labeled 1, 2). 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. 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	There are two inputs available (labeled A, B). 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.	N/A	N/A
Solenoid	There are two solenoids available (labeled 1, 2). Optionally, type a description for the solenoid.	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 solvent system.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A

GX-274 Liquid Handler without Pump

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.	175 mm Probe	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.	175	0–260
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	172	Calculated based on Z Clamp Height and Probe Type.

Output	There are two outputs available (labeled 1, 2). 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. 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	There are two 24V outputs available (labeled 1, 2). 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. 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	There are two inputs available (labeled A, B). 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.	N/A	N/A
Solenoid	There are two solenoids available (labeled 1, 2). Optionally, type a description for the solenoid.	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

GX-281 Analytical Liquid Handler

Probe Type (mm)	This is the Z travel height.	125 mm Probe	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	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	Calculated based on Z Clamp Height and Probe Type.

Rinse Park Location	The rinse location at which 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	0.5, 1.1, 5.5
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe.	0	0–999999
Left GX Direct Inject Valve	Indicate the size of the injection valve installed in the left position.	Not Installed	Not Installed, 1/8″, 1/16″
Right GX Direct Inject Valve	Indicate the size of the injection valve installed in the right position.	Not Installed	Not Installed, 1/8″, 1/16″
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.	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.	N/A	N/A
Output	There are four outputs available (labeled 1, 2, 3, 4). 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. 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	There are four 24V outputs available (1, 2, 3, 4). 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. 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	There are four inputs available (labeled A, B, C, D). 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.	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

GX-281 Liquid Handler without Pump

Probe Type (mm)	This is the Z travel height.	210 mm Probe	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.	210	95–300
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	207	Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location at which the instrument home completes.	Left 1	Left 1, Left 2, Left 3, Right 1, Right 2, Right 3
Left GX Direct Inject Valve	Indicate the size of the injection valve installed in the left position.	Not Installed	Not Installed, 1/8″, 1/16″
Right GX Direct Inject Valve	Indicate the size of the injection valve installed in the right position.	Not Installed	Not Installed, 1/8″, 1/16″
Z Injection Valve	Indicate whether (checked) or not (cleared) a Z Injection Valve is installed.	Cleared	N/A

Output	There are four outputs available (labeled 1, 2, 3, 4). 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. 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	There are four 24V outputs available (1, 2, 3, 4). 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. 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	There are four inputs available (labeled A, B, C, D). 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.	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

GX-281 Prep Liquid Handler

Probe Type (mm)	This is the Z travel height.	175 mm Probe	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.	175	95–300
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	1	Calculated based on Z Clamp Height and Probe Type.
Rinse Park Location	The rinse location at which 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	1.1, 5.5, 10.5, 30, 50
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe.	0	0–999999
Left GX Direct Inject Valve	Indicate the size of the injection valve installed in the left position.	Not Installed	Not Installed, 1/8″, 1/16″
Right GX Direct Inject Valve	Indicate the size of the injection valve installed in the right position.	Not Installed	Not Installed, 1/8″, 1/16″
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.	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.	N/A	N/A
Output	There are four outputs available (labeled 1, 2, 3, 4). 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. 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	There are four 24V outputs available (1, 2, 3, 4). 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. 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	There are four inputs available (labeled A, B, C, D). 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.	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

Quad-Z 215

Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	175	0–190
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction. For Quad-Z 215 with Tips, TRILUTION LH considers the installed tip when determining the Z Safe Height.	172	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.
Probes to Use	The probes that will be used when this instrument is selected as the pump in a task.	A, B, C, D	A, B, C, D
ID	A unique identifier to address probes on the instrument.	A, B, C, D	A, B, C, D
Tip Type	The tips installed on the liquid handler. When a tip type is selected, a tip zone is automatically created in the bed layout.	None	DIAMOND tip D1000, DIAMOND Tip D200, DIAMOND Tip DL10-A, DIAMOND Tip DL10-B
Contacts	There are four outputs available (labeled 1, 2, 3, 4), four inputs available (labeled A, B, C, D), and one 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.	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

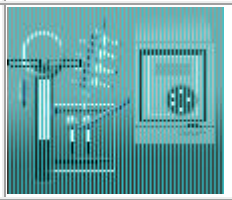
ACCESSORIES

	VALVEMATE II

Accessories Properties

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
VALVEMATE II			
Valve Positions	The number of positions.	2	2, 4, 6, 8, 10
Initial Valve Position	The valve position after initialization at the beginning of a run.	1	1, 2, 3, 4, 5, 6
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

PUMPS

	402 Pump Dual		VERITY 4020 Syringe Pump
	402 Pump Dual with Tee		VERITY 4060 Syringe Pump
	402 Pump Single		VERITY 4120 Dual with Tee Syringe Pump
	406 Pump Dual		VERITY 4220 Syringe Pump
	406 Pump Single		VERITY 4260 Syringe Pump
	GX Syringe Pump		Virtual Pumping System
	Minipuls 3		

Pumps Properties

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
402 Pump Dual, 402 Pump Dual with Tee, 402 Pump Single, 406 Pump Dual, 406 Pump Single			
Syringes to Use	The syringes that will be used when this instrument is selected as the pump in a task.	A, B (402 Pump Dual, 406 Pump Dual)	A, B (402 Pump Dual, 406 Pump Dual)
ID	A unique identifier to address syringes on the instrument.	A (402 Pump Single, 402 Pump Dual with Tee, 406 Pump Single) A, B (402 Pump Dual, 406 Pump Dual)	A (402 Pump Single, 402 Pump Dual with Tee, 406 Pump Single) A, B (402 Pump Dual, 406 Pump Dual)
Syringe Name	A unique name to address syringes on the instrument.	A (402 Pump Single, 402 Pump Dual with Tee, 406 Pump Single) A, B (402 Pump Dual, 406 Pump Dual)	N/A
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for each syringe size, see Flow Rates.	1000 (402 Pump Dual, 402 Pump Single) 10000 (402 Pump Dual with Tee, 406 Pump Dual, 406 Pump Single)	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.	Reservoir	N/A
Right Syringe Size (µL)	The capacity of the right syringe (B). For a range of suggested flow rates for this syringe size, see Flow Rates. (402 Pump Dual with Tee)	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

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. (402 Pump Dual, 402 Pump Dual with Tee, 402 Pump Single)	0	0–31
Pump Serial Number	The serial number of the pump. The serial number is located on the rear panel and near the bottom of the instrument. (406 Pump Dual, 406 Pump Single)	N/A	N/A
GX Syringe Pump			
ID	A unique identifier to address the syringe on the instrument.	A	A
Syringe Name	A unique name to address syringes on the instrument.	A	A
Size (µL)	The capacity of the installed syringe. For a range of suggested flow rates for each syringe size, see Flow Rates.	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	The serial number of the pump. The serial number is located on the rear panel	N/A	N/A
VERITY 4020 Syringe Pump/VERITY 4060 Syringe Pump/VERITY 4120 Dual with Tee Syringe Pump/VERITY 4220 Syringe Pump/VERITY 4260 Syringe Pump			
Syringes to Use	The syringes that will be used when this instrument is selected as the pump in a task.	A (Single syringe pumps) A, B (Dual syringe pumps)	A (Single syringe pumps) A, B (Dual syringe pumps)
ID	A unique identifier to address syringes on the instrument.	A (Single and dual with tee syringe pumps) A, B (Dual syringe pumps)	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.	1000 (VERITY 4020 Syringe Pump, VERITY 4220 Syringe Pump) 10000 (VERITY 4060 Syringe Pump, VERITY 4260 Dual Syringe Pump, 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 this syringe size, see Flow Rates.	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
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

Minipuls 3

Aspiration Direction	Specifies which way the pump head on the Minipuls is turning when it is aspirating.	Counter Clockwise	Clockwise, Counter Clockwise
Adjust (%)	A percentage value to adjust flow rate for the Minipuls. Flow rate cannot exceed the maximum allowed for the tubing selected.	0	-100–100
Transfer Tubing (mL)	Tubing that is being used on the Minipuls in this configuration.	5.0	0.2, 0.4, 1.0, 2.8, 3.0, 5.0, 10.0
Other Tubing (mL)	When selected, the non-standard size of the tubing being used on the Minipuls.	0	0–99
Pump Head Type	The pump head installed on the Minipuls.	Standard	Standard, High Flow
Number of Channels	The number of channels that will be used when this instrument is selected as the pump in a task.	1	1, 2, 4, 8
Channels	The channels that will be used when this instrument is selected as the pump in a task.	A	A, B, C, D, E, F, G, H

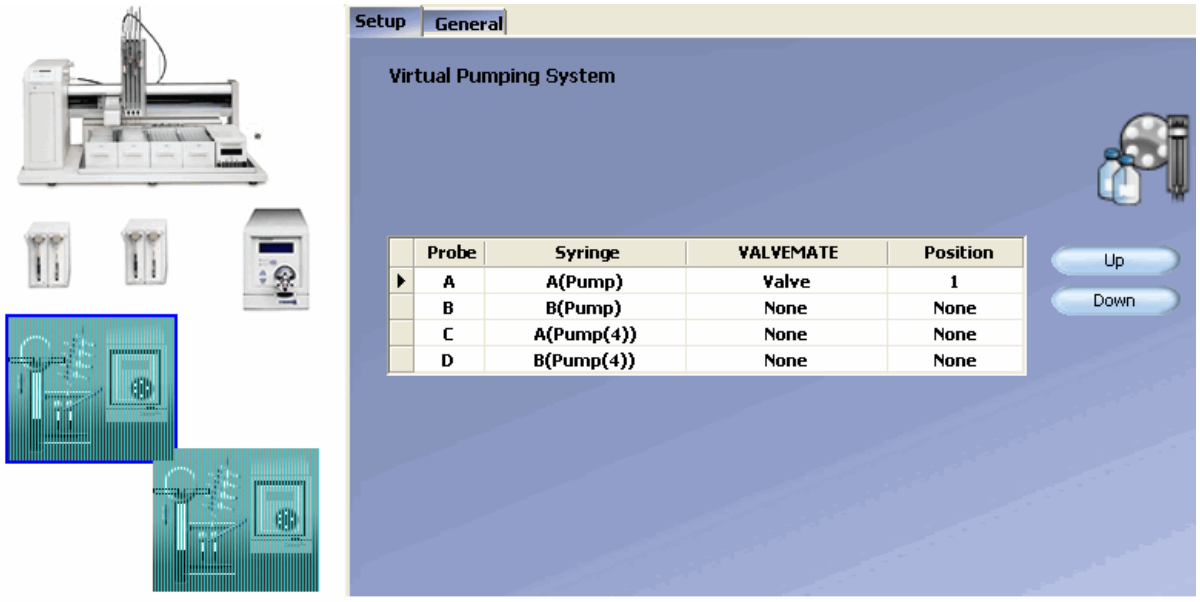
ID	A unique identifier to address the channel on the instrument.	A	A, B, C, D, E, F, G, H
Channel Name	A unique name to address the channel on the instrument.	A	N/A
Tubing ID (mm) [Max Flow Rate (mL/min)]	The capacity of the tubing for each channel.	None	See Minipuls 3 Tubing Options and Associated Maximum Flow Rates.
Reservoir Name	A unique name used to identify the liquid that is flowing through the Minipuls. It is important for sample tracking.	Reservoir	N/A
Instrument Name	The name that will be used to identify this instrument in a task.	Minipuls 3	N/A
Reservoir Name	The name that will be used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
Pump Name	The name that will be used to identify this pump in a task.	Pump	
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.	30	0–63

Virtual Pumping System
For more information about using a VPS, see Virtual Pumping System (VPS).

Probe	The probes in the Configuration using the VPS.		
Syringe	The syringes in the Configuration using the VPS.		
VALVEMATE	The VALVEMATE that the VPS will use (if any).	None	N/A
Position	The valve position (1–10) on the VALVEMATE. Required when a VALVEMATE is selected.	None	1–10 or None
Pump Name	The name that will be used to identify this instrument in a task.	Pump	

Virtual Pumping System (VPS)

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



The Virtual Pumping System Properties Window

How to Use a VPS

Single Probe, Single Syringe, Multiple Reservoir Configuration

1 Drag and drop a single-probe liquid handler with installed single syringe pump into the workspace (for example, 215 Liquid Handler) and set the properties.
2 Drag and drop a VALVEMATE II into the workspace and set the properties. The VALVEMATE II should be plumbed 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 II from the drop-down list.
   b) In the Position field, click the arrow and then select the VALVEMATE II valve position from the drop-down list that corresponds to the first reservoir solution.
   c) In the Pump Name field on the General tab, 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.

Multiple Probe, Multiple Syringe Configuration

1 Drag and drop a multiple probe liquid handler into the workspace and set the properties.
2 Drag and drop one or more syringe pumps (each with a unique GSIOC ID and unique serial number) into the workspace and set the properties.
3 Drag and drop a Virtual Pumping System into the workspace.
   a) Click on a Syringe Name and then click the up or down arrow to associate the syringe with a probe.
   b) In the Pump Name field on the General tab, type a name for the VPS. This name will be used to identify the VPS in a task.

Single Probe, Multiple Syringe Configuration

1 Drag and drop a single-probe liquid handler into the workspace and set the properties.
2 Drag and drop a VALVEMATE II into the workspace and set the properties. The VALVEMATE II should be plumbed at this point.
3 Drag and drop the pumps into the workspace and set the properties. Set a unique GSIOC ID or serial number for each.
4 Drag and drop a Virtual Pumping System into the workspace.
   a) Click 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 II from the drop-down list.
   c) In the Position field, click the arrow and then select the VALVEMATE II valve position from the drop-down list that corresponds to the syringe.
   d) In the Pump Name field on the General tab, 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.

COMMUNICATION

	506C System Interface		606 GSIOC to RS-232 Converter

Communication Properties

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
506C System Interface			
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
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			
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

INJECTOR

	819 Injection Module		845Z Injection Module

Injector Properties

NAME	BRIEF DESCRIPTION	DEFAULT VALUE	RANGE
819 Injection Module			
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			
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

Modify a Configuration

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

- adding new instruments to an existing configuration
- deleting 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

DELETE AN INSTRUMENT FROM A CONFIGURATION

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

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

CLEAR DEFAULT

When a method is saved, the configuration is named. An option is provided to set that configuration and its associated bed layout as a default for future new methods. Click **Clear Default** to remove a configuration and its associated bed layout as default.

Clear Default

When a method is saved, the configuration and bed layout must be named. An option is provided to use the configuration and bed layout as defaults in future new methods. Click **Clear Default** to no longer use a default configuration and bed layout.

METHOD BUILDER - BED LAYOUT

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

- a template
- footprints
- racks
- wells

To create a bed layout, see How to Create a Bed Layout.

Bed Layout Tab Window

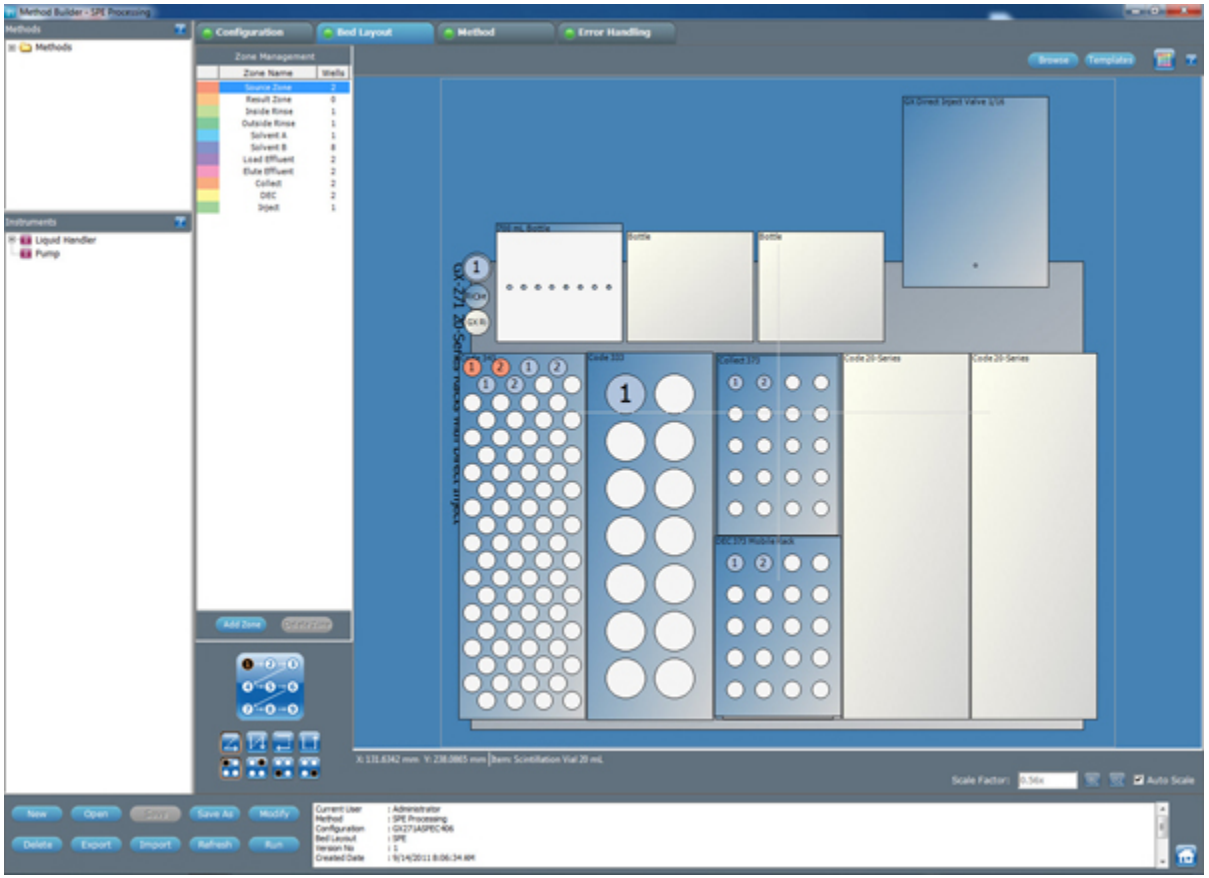
BED LAYOUT TAB WINDOW

The Bed Layout tab window is a graphical interface used to create a bed layout.

The Bed Layout tab window includes the following:

- Zone Management
- Zone Numbering Pattern
- Workspace
- Instruments Palette
- Color Management

ZONE MANAGEMENT

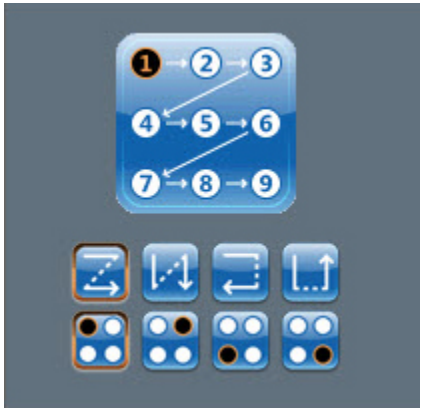


Use one Management to add, modify, or delete zones, and to select zones for inactive and active wells.

For information on how to create a bed layout, see How to Create a Bed Layout.

For information on how to modify a bed layout, see How to Modify a Bed Layout.

ZONE NUMBERING PATTERN



Allows for selecting how blocks of wells will be numbered.

To select a pattern for numbering the wells, do the following:

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

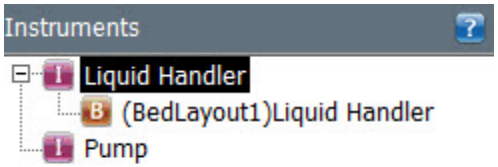
For information on how to create a bed layout, see How to Create a Bed Layout.

WORKSPACE

Forms the area to create or view a bed layout.

For information on how to create a bed layout, see How to Create a Bed Layout.

INSTRUMENTS PALETTE

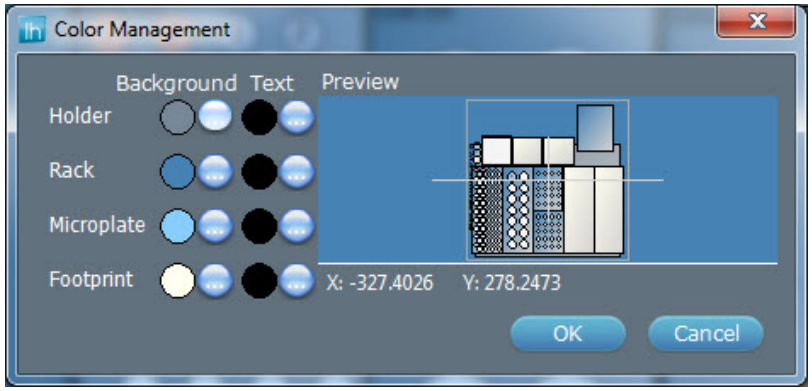


Displays the name of the liquid handler in the configuration and its associated bed layout.

For a description of the instruments palette as it relates to the Configuration tab, see Instruments Palette.

COLOR MANAGEMENT

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



How to Create a Bed Layout

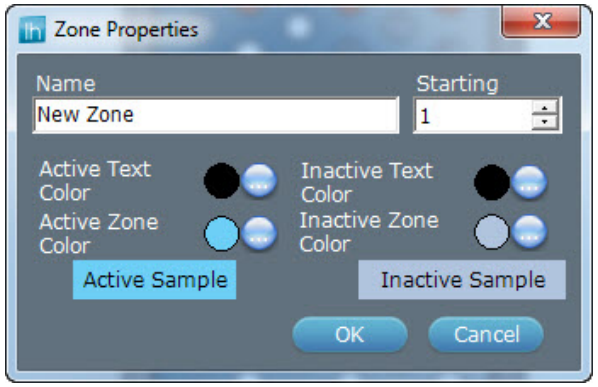
In the Method Builder, first create a configuration (see How to Create a Configuration) and then select the Bed Layout tab.

SELECT A TEMPLATE

Do one of the following.

- To use the displayed template, continue to Add a Rack/Rinse Station/Injection Port.
- Click **Templates**. Templates are filtered for the associated instrument. Select a bed layout template and then click **OK**.
- Click **Browse**. Select an existing bed layout and then click **OK.**

DEFINE A ZONE



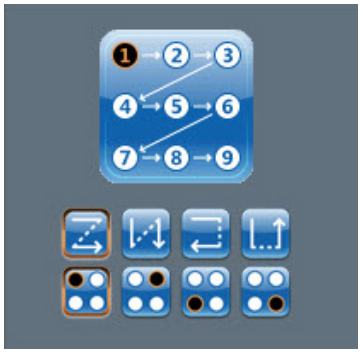
To define a Zone, do the following:

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 Click **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/injection port, do the following:
   a) Double-click the footprint.
   b) Select a rack and then click **OK** or double-click the rack name. The window is refreshed to display the rack/rinse station/injection port on the template.

SELECT A ZONE NUMBERING PATTERN



To select a pattern for numbering the wells:

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

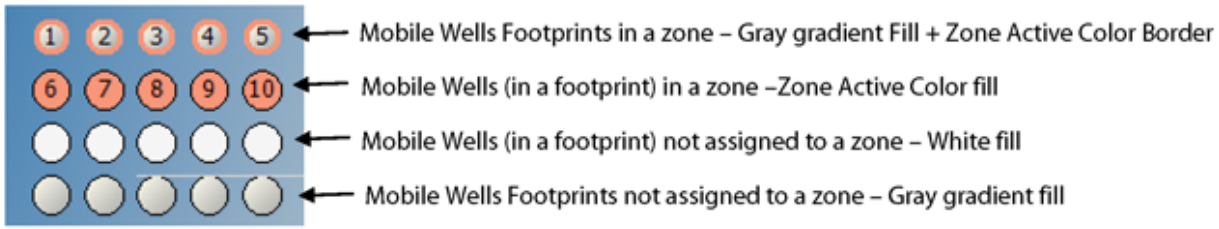
NUMBER WELLS IN ZONE

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

- Hold **CTRL** and then click on individual wells to number them in the order selected.
- Click and drag over blocks of wells to number them according to the numbering pattern selected.
- When using a rack with more than one mobile well associated with a mobile well footprint, do the following:
  a) Double-click the mobile well footprint or right-click on a mobile well footprint and then select **Add Wells to Well Footprints...**
  b) Optionally, select **Fill entire rack with selected well** to use the mobile well selected in the next step in all compatible mobile well footprints.
  c) Select the mobile well and then click **OK** or double-click the mobile well.
  d) Add the mobile well footprint (not the mobile well) to a zone in the same manner that wells are added to zones.

NOTE

When using a rack with one mobile well associated with one or more footprints, numbering the mobile wells also numbers the mobile well footprints (with the same number).
Refer to the diagram below for information about how to identify mobile wells and mobile well footprints:



- 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.

NOTE

If the liquid handler is a Quad-Z 215 Liquid Handler with Disposable Tips, be sure to use the tip zones TRILUTION LH created for tips.

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 mobile wells from mobile well footprints
- deleting zones
- changing the zone numbering pattern
- replacing racks in the workspace
- adding wells, mobile wells, or mobile well footprints to zones
- clearing wells, mobile wells, or mobile well footprints from zones

When you right-click on a rack or well in the workspace, a menu is provided with options to delete the rack or clear the well from the active zone or from all zones. You can also delete racks from the workspace by selecting the rack and then pressing the **DELETE** key.

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.

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.
3 Do any of the following:
   a) Add new racks, wells, or zones to the template; see How to Create a Bed Layout.
   b) Delete racks from the workspace or mobile wells from mobile well footprints by doing the following:
      1) Click to select/highlight the rack or mobile well.
         Note: To select mobile wells and mobile well footprints without assigning them to a zone, either click in the white space in Zone Management or right-click and then select **Deselect All Zones**.
      2) Right-click and then select **Delete** or press the **DELETE** key.
   c) Delete wells, and/or mobile wells, and/or mobile well footprints from all zones or from the active zone by doing the following:
      1) Select the wells and/or mobile wells, and/or mobile well footprints.
      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 by doing the following:
   1) Click to select any element.
   2) Right-click and then select either **Clear All Zones** or **Clear Active Zone**.
e) Delete zones by doing the following:
   1) Select the zone to be deleted; however, the default zones (Source Zone, Result Zone, Inside Rinse, and Outside Rinse) cannot be deleted.
   2) Click **Delete** or press the **DELETE** key.
f) Change the colors. Double-click the zone name to modify.
g) Change the zone numbering pattern; see Zone Numbering Pattern.

METHOD BUILDER - METHOD

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

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

Method Tab Window

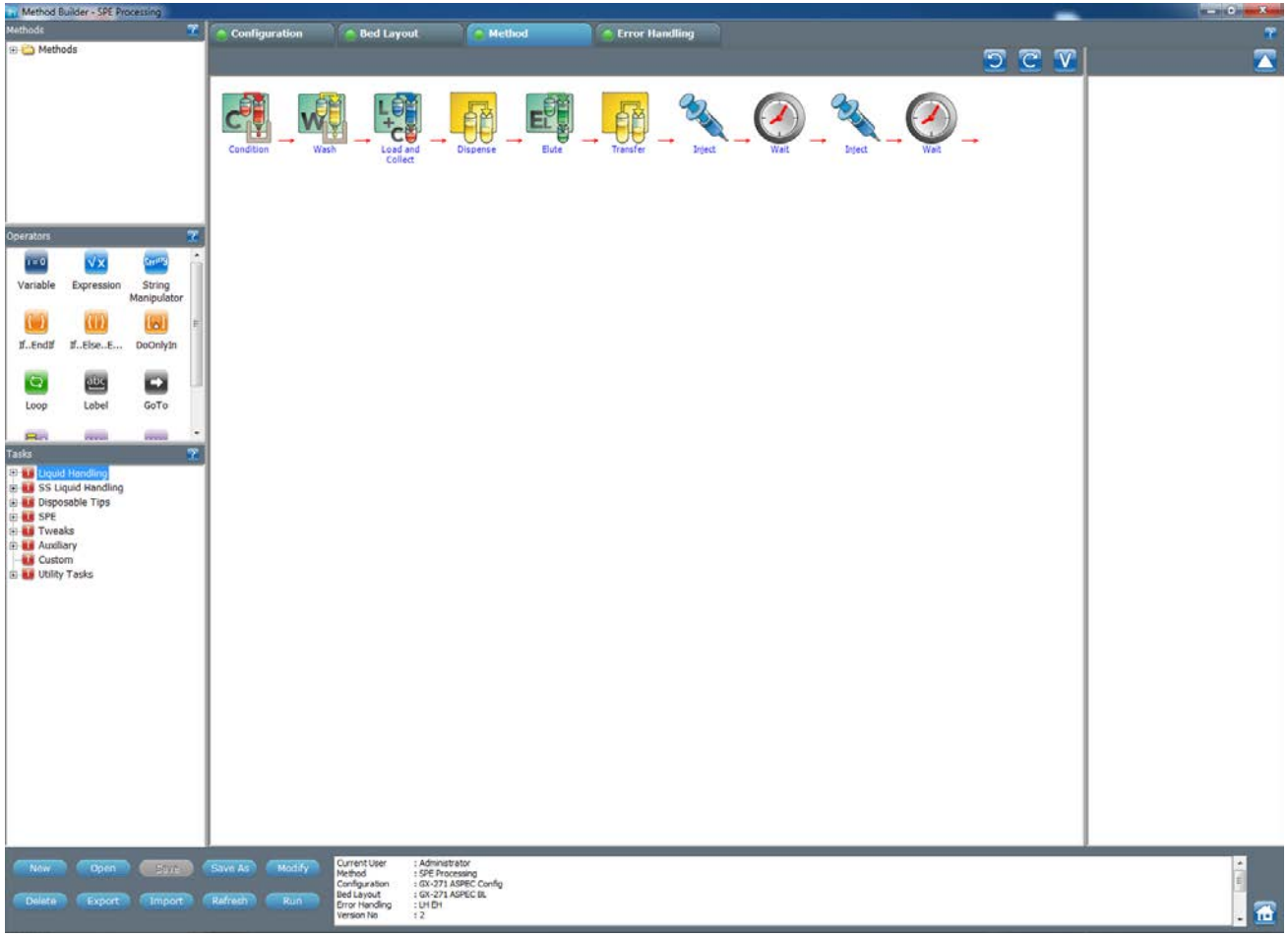
METHOD TAB WINDOW

The Method tab window is a graphical interface used to set the steps in a method.

The Method tab window includes the following:

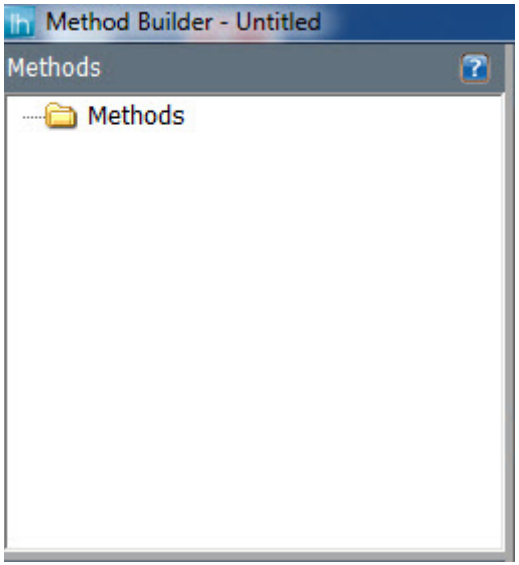
- Methods Palette
- Operators Palette
- Tasks Palette
- Workspace

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



METHODS PALETTE

Lists the methods.



Right-click Menu

Methods Palette

Right-click in the Methods palette and the following options are displayed:

MENU	DESCRIPTION
Create Folder	Displays the New Folder dialog for creating a new top-level folder.
New Method	Create a new method.

Folder

Right-click on a folder in the Methods palette and the following options are displayed:

MENU	DESCRIPTION
Create Folder	Displays the New Folder dialog for creating a new folder in the current folder.
Rename Folder	Rename the current folder.
Delete Folder	Deletes the folder if empty.

Method

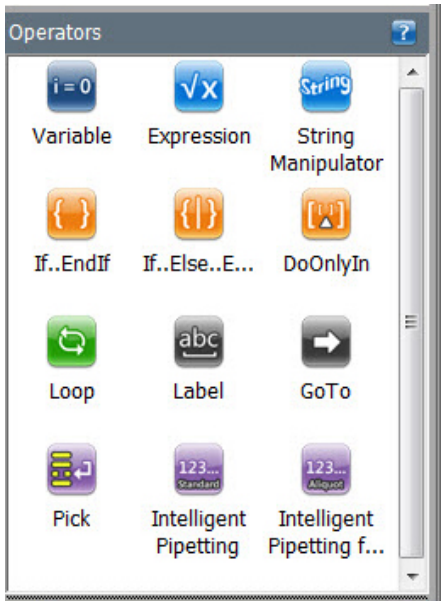
Right-click on a method and the following options are displayed:

MENU	DESCRIPTION
New Method	Create a new method.
Open Method	Open an existing method.
Delete Method	Deletes the selected method or all versions of the method.
Copy Method	Copies the method for pasting in another folder.

OPERATORS PALETTE

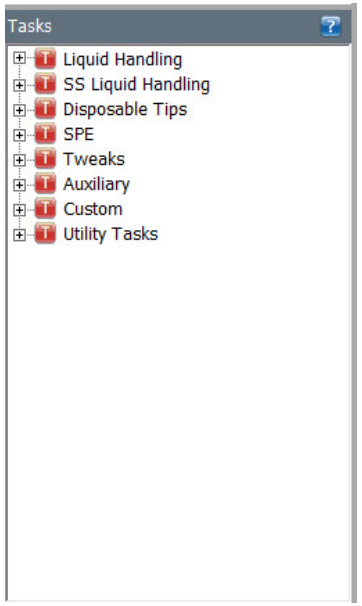
Lists the operators.

For more detailed information about operators, see Operators.



TASKS PALETTE

Lists the available tasks by function. For a detailed description of each task, its task properties, and the sequence of steps for the task, see any or all of the following:



- Tasks - Liquid Handling
- Tasks - SS Liquid Handling
- Tasks - Disposable Tips
- Tasks - SPE
- Tasks - Tweaks
- Tasks - Auxiliary

WORKSPACE

Lists the operators, variables, expressions, and tasks used in the method. The left panel provides the sequence. The right panel shows the operator container for the selected operator that can contain tasks and other operators.

For information on how to create a method, see How to Create a Method.

Toolbar

Click the icon to perform the actions described below:

ICON	LABEL	DESCRIPTION
	Undo	Reverses the last action.
	Redo	Repeats the last action prior to an undo.
	Variable List	Opens the advanced Variable Properties dialog. For more information about variables, see Working with Variables.
	Back	Provides the ability to step through nested tasks, and operators in Normal 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
Cut	Cuts the task for deleting or pasting in a new location in the workspace, in an operator or expression, or in another method.
Copy	Copies the task to duplicate in a new location in the workspace, in an operator or expression, or in another method.
Paste	Places a cut or copied task in the workspace, in an operator or expression, or in another method.
Delete	Removes the task from the workspace.
Line Break	A toggle for moving tasks 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 in the Custom Task Builder.

Workspace

Right-click in the workspace to display the following menu options:

MENU	DESCRIPTION
Paste	Places a cut or copied task in the workspace, in an operator or expression, or in another method.
View Extended	Hides the right panel and expands the operator containers within the sequence in the workspace to show the tasks or operators contained within.
View Normal	Collapses the operator container in the right panel for the tasks and operators contained within the selected operator.

How to Create a Method

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

1 To begin creating a method, do either of the following:
   - Select **Method** from the **Liquid Handling** menu.
   - Open an existing method and then click **New**.
2 Create a configuration. For more information, see How to Create a Configuration.
3 Create a bed layout. For more information, see How to Create a Bed Layout.
4 Select, drag, and then drop tasks into the Method tab workspace in the order to be performed. Enter values for task properties or use variables. For more information about using variables to make the method more flexible, see Working with Variables.
5 Optionally, set up instrument error handling. For more information, see How to Set Up Instrument Error Handling.

DELETE A TASK

To remove a task from the workspace, select the task and then do either of the following:

- Right-click and then select **Delete**.
- Press the **DELETE** key.

MODIFY TASK PROPERTIES

To change the values for the task properties, do either of the following:

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

MODIFY A TASK

To modify a task:

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

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

Modify a Task

To modify a task:

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

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

Modify Task Properties

To change values for properties in a task, do either of the following:

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

METHOD BUILDER - ERROR HANDLING

The Error Handling tab window is used to set error handling conditions. TRILUTION LH can respond automatically 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.
- An Error Method is not specified and Resume Run is selected.
- An Error Method is specified, and Resume Run is not selected.
- An Error Method is not specified, and Resume Run is not selected.

A notification is displayed to indicate than an error has been encountered.

For information about setting up error handling conditions, see How to Set Up Instrument Error Handling.

How to Set Up Instrument Error Handling

1 In the Method Builder, first create a configuration and a bed layout (see How to Create a Method) and then select the Error Handling tab.
2 Select the instrument to monitor from the drop-down list of instruments in the configuration.
3 Optionally, select an error method to run when this error is encountered. The error method should not include an error method and should have limits that are greater than the control method error limits.
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, although 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.

PARAMETER DESCRIPTIONS

ERROR	DESCRIPTION
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.
Instrument Error	This error results when any scheduled command fails to execute or if the software loses communication with an instrument.
Pressure	This error results when the back pressure on the syringe is outside of the range set using the value and a mathematical operator on this screen. When this error is encountered on a VERITY 4060 or VERITY 4260 Syringe Pump, a command (Halt Syringes) is sent and the syringe stops.
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 an error input contact is activated. The valid mathematical operator is == and the valid values are Open and Closed.

ERROR RESPONSES

The following table describes all responses post-error:

Error Responses

ERROR METHOD SPECIFIED?	RESUME RUN?	RESPONSE
Yes	Yes	• Error noted in log • Error Method execution noted in log • Control Method terminates • Error handling method executes • Application Run resumes starting with the next sample in the Sample List • Run Complete notification displays (with errors, see log for details)
No	Yes	• Error noted in log • Control Method terminates • Application Run resumes starting with the next sample in the Sample List • Run Complete notification displays (with errors, see log for details)
Yes	No	• Error noted in log • Run terminates • Error handling method executes • Error Method execution noted in log • Run Complete notification displays (with errors, see log for details)
No	No	• Error noted in log • Run terminates • Run Complete notification displays (with errors, see log for details)

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 click **Modify**.

Clear Default

When a method with error handling is saved, the set of error handling conditions must be named (Error Handling Name). An option is provided to set those error handling conditions as a default for future new methods. Click **Clear Default** to no longer use a default set of error handling conditions for new methods.

APPLICATION

In the Application Builder, you specify the list of steps, called a sample list, to execute during a run. A row in the sample list identifies the method to run to process one or more samples. For more information, see How to Create a Sample List.

Optionally, use the scheduling feature to optimize applications in which significant wait times are used. By scheduling applications, more efficient use of the liquid handling instrumentation is possible. For more information, see How to Schedule an Application.

After setting up the sample list, start and monitor the progress of a run. For more information, see Running an Application.

To perform manual control, use Manual Control. For more information, see Application - Manual Control.

Application Builder Window

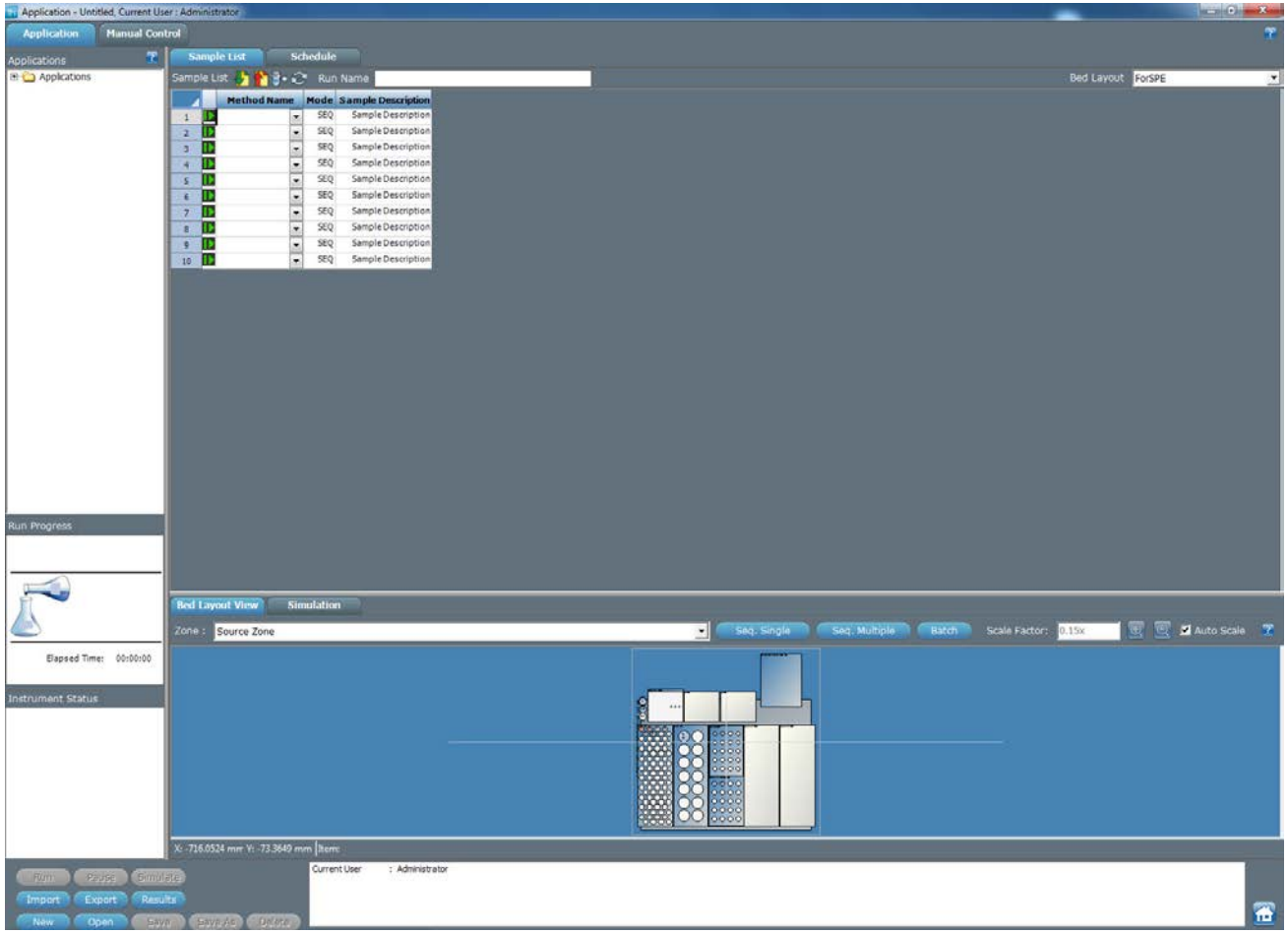
APPLICATION BUILDER WINDOW

Open the Application Builder in either of the following ways:

- On the **Liquid Handling** menu, select **Application**.
- Open or save a method in the Method Builder, and then click **Run**.

The Application Builder window includes the following:

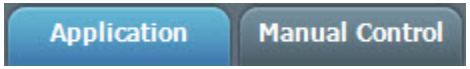
- Title Bar
- Application Tab
- Manual Control Tab
- Applications Palette
- Run Progress Indicator
- Instrument Status
- Sample List Tab
- Sample List Toolbar
- Schedule Tab
- Run Name
- Bed Layout
- Bed Layout View Tab
- Simulation Tab
- Action Buttons
- Info Window



TITLE BAR

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

APPLICATION TAB



If using manual control, click to return to the application.

MANUAL CONTROL TAB

Click to access manual control after inserting at least one step in the sample list. Manual control is not accessible while running. For more information, see Application - Manual Control.

APPLICATIONS PALETTE

Lists the applications.

Right-click Menu

Applications Palette

Right-click in the Applications palette to display the following options:

MENU	DESCRIPTION
New Folder	Displays the New Folder dialog for creating a new top-level folder.
New Application	Allows for creating a new application.
Paste Application	Pastes a copied application with a new name in the selected folder.

Folder

Right-click on a folder in the Applications palette to display the following options:

MENU	DESCRIPTION
New Folder	Displays the New Folder dialog for creating a new folder in the selected folder.
Rename Folder	Allows for renaming the selected folder.
Delete Folder	Deletes the folder if empty.
New Application	Allows for creating a new application.
Paste Application	Pastes a copied application with a new name in the selected folder.

Application

Right-click on an application in the Applications palette to display the following options:

MENU	DESCRIPTION
New Application	Allows for creating a new application.
Open Application	Opens the selected application.
Delete Application	Allows for deleting the selected application or all versions of the application.
Copy Application	Copies the application for pasting in another folder.

RUN PROGRESS INDICATOR

The Run Progress Indicator is a graphical representation of the progress of the run or simulation.

It displays the following:

- name of the current task or operator
- elapsed time
- estimated run time (displayed only if the saved application is simulated first and no changes are made before or during a run)
- percentage completed (based on the elapsed time compared to the estimated run time and displayed only if the saved application is simulated first and no changes are made before or during a run)

NOTE	**The estimated run time cannot be determined for tasks with unknown durations, such as Wait for Contact, Prompt, Prompt for Input, Run Executable, and Wait with Display.** **The estimated run time cannot be determined for applications that use GEARS devices.**

For more information about running a simulation, see Simulation Tab

INSTRUMENT STATUS

While running, the Instrument Status display is used to monitor the pressure of the 406 Pump Single or 406 Pump Dual VERITY 4060 Syringe Pump, or VERITY 4260 Syringe Pump.

SAMPLE LIST TAB

If viewing the scheduling chart for an application, click to return to the sample list.

For information about how to create a sample list, see How to Create a Sample List.

SAMPLE LIST TOOLBAR

The sample list is a list of the steps to execute during a run.

Click an icon to activate its function in the sample list as described below:

ICON	DESCRIPTION
	Allows for importing Sample List (.TSL) files. For more information, see How to Import a Sample List.
	Saves the current sample list to a selected location as a .TSL file. For more information, see How to Export a Sample List.
	Allows for setting initial volumes for any or all wells in each bed layout in the application. For more information, see Set Initial Volumes.
	Refreshes the sample list.

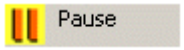
Right-click Menu

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

MENU	DESCRIPTION
Add Row	Adds the first row to a new list or adds a row to the bottom of the list.
Add Multiple	Adds a user-specified number of rows to the bottom of the list.
Insert Row	Adds a row between two existing rows.
Clear Row	Clears a row of all values but keeps the row in the sample list.
Delete Row	Removes a row from the sample list.
Paste Row	Pastes a user-specified number of copies of the selected row after the selected row.

Open Method	Opens the method in the selected row in the Method Builder.
Schedule	Sets the row to Schedule (SCH) mode, which optimizes processing samples in methods with significant
Unschedule	Changes the mode for the selected sample(s) from Schedule (SCH) to Sequential (SEQ).
Set Rows	Provides the option to set all selected rows to Run, Skip, or Pause.

The following options are available after right-clicking on a pending row:

	Functions as a resume or continue when a row has been paused.
	Select to skip the row.
	Select to pause a row. Right-click and then select Run to run the row.

Additional Copy/Paste Options

The sample list control in TRILUTION LH includes options for copying and incrementing within a column 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, Mode, and Schedule Group 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.
- If the copied row was scheduled and is being pasted below another scheduled row, the pasted row will be assigned to the same schedule group as the row above it.
- If the copied row was scheduled and is being pasted below an unscheduled row, the pasted row will be assigned to a new schedule group.

SCHEDULE TAB

Click to view the chart for a running schedule group.

The chart shows the progress of scheduled steps in a schedule group.

Before setting up schedule groups, create the sample list. For more information, see How to Create a Sample List.

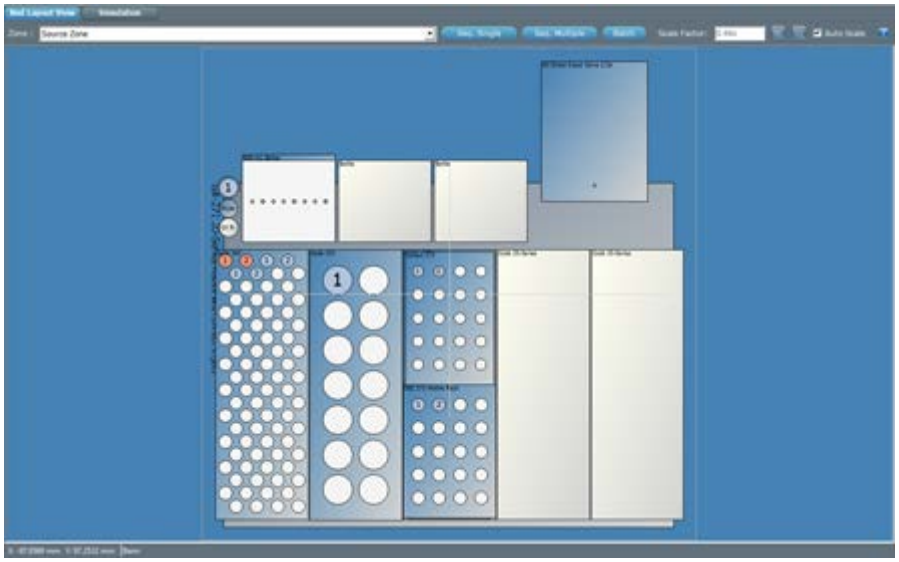
RUN NAME

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

BED LAYOUT

Select a bed layout from the drop-down list to display methods using that bed layout. Only methods using that bed layout will be available to choose when setting up the sample list for the application.

BED LAYOUT VIEW TAB



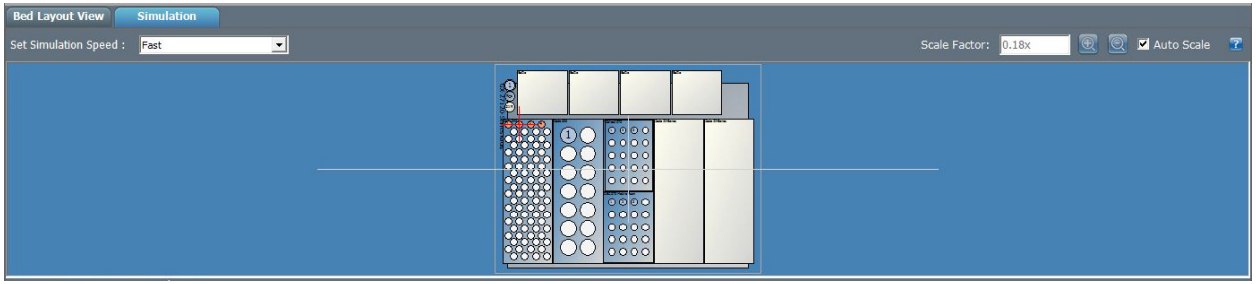
When creating a sample list, it is possible to view the bed layout, select multiple wells, and then have the software generate steps in the sample list.

1 Open the Application builder.
2 Select a method containing a well variable.
3 Place the cursor in the first cell for which to select a well.
4 If not selected, click to select the **Bed Layout View** tab.
5 Select a **Zone** from the drop-down list. Available wells appear highlighted in the active zone color.
6 Choose multiple well locations.
   - To select random wells within one zone, press the **CTRL** key and then select each well.
   - To select a range of wells within one zone, click and drag over a block of wells.

   Note: Zoom, if necessary. For more information, see Zoom.
7 Select the mode in which the samples should be processed by clicking **Seq. Single**, **Seq. Multiple**, or **Batch**.
   If **Seq. Single**, all wells selected will be added as one row in the sample list and the mode will be set to Sequential. In Sequential (SEQ) mode, each sample is fully processed using all tasks in the method before continuing to the next sample.
   If **Seq. Multiple**, each well selected will be added as its own row in the sample list and the mode will be set to Sequential. In Sequential (SEQ) mode, each sample is fully processed using all tasks in the method before continuing to the next sample.
   If **Batch**, all wells selected will be added as one row in the sample list and the mode will be set to Batch. In Batch (BAT) mode, all samples are processed in order using the first task in the method. Then all samples are processed in order using the second task in the method, and so on.

SIMULATION TAB

A graphical representation of a run is referred to as a simulation.

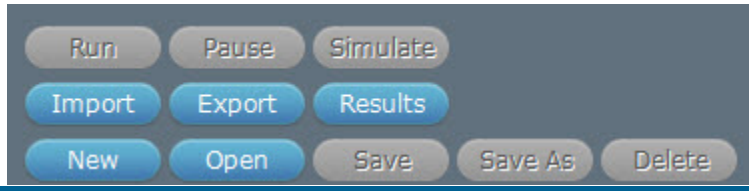


To view a run simulation:

1 Create and save or open an application.
2 Select the Simulation tab.
3 In the Set Simulation Speed field, select a speed from the drop-down list.
4 Click **Simulate**. Red crosshairs represent the probe movement.
5 Use the Scale Factor options to zoom and/or resize the window, if desired.

ACTION BUTTONS

The following action buttons are located in the lower left corner of the Application window.



ACTION BUTTON	DESCRIPTION
Run/Stop	Starts an open or saved application run and changes the button text to Stop. Click **Stop** to stop the run or simulation.
Pause/Resume	Only available while running.
Simulate	Starts a graphical representation of an open or saved application run without moving the instruments and changes the button text on the Run button to Stop.
Import	Imports a .LHAE file and lists the application in the Applications palette. For more information, see How to Import Applications.
Export	Exports the application to a specified location as a .LHAE file. For more information, see How to Export Applications
Results	Opens the Run Results window. From this window, results can be viewed, exported, archived, restored, or refreshed. For more information, see Run Results.
New	Enables creating a new application.
Open	Opens an existing application.
Save	Saves a previously saved and open application to the same name.
Save As	Saves a new application or saves an existing application to a new name. Optionally, type a description.
Delete	Deletes the open application or all versions of the application.

INFO WINDOW

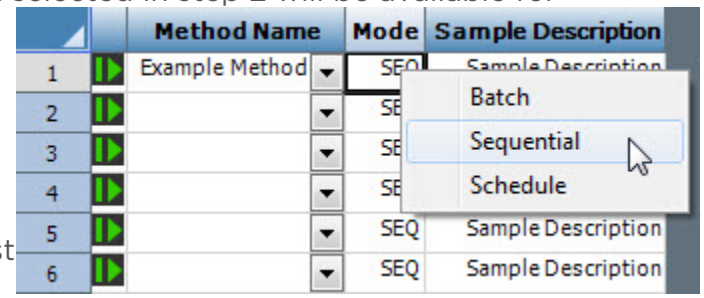
Lists the information about the open application (if applicable) and the name of the current user.

During the run, lists run-time events and the time they occurred. For more information, see During a Run. After the run, this information can be viewed in the log file. For more information, see View the Log File.

How to Create a Sample List

Before setting up a sample list, create the methods to use during the run.

1 Access the Application window by:
   - clicking **Application** from the **Liquid Handling** menu
   - clicking **Run** in the Method Builder after saving the method
2 Verify that the correct bed layout is selected. For more information, see Bed Layout.
3 Select the method to use for the first sample. Only methods using the bed layout selected in step 2 will be available for selection.
4 Right-click the cell to select the mode to use for the first sample. There are three choices (Sequential, Batch, and Schedule) that are described below: The default is Sequential.
   - **Sequential** - In Sequential (SEQ) mode, each sample is fully processed using all tasks in the method before continuing to the next sample.
   - **Batch** - In Batch (BAT) mode, all samples are processed in order using the first task in the method. Then all samples are processed in order using the second task in the method, and so on.
   - **Schedule** - In Schedule (SCH) mode, samples are processed to optimize methods with significant wait time in an efficient manner.



5 Optionally, type a description of the sample in the Sample Description column.
6 Right-click on a column name and then toggle desired columns to show or unneeded columns to hide.
   - The Schedule Group column indicates the samples that will be grouped together when running in schedule mode.
7 Optionally, organize the columns by dragging them and dropping them in a new position and/or resize the columns by dragging the column border in the column header. Shown columns and selected widths are saved when the application is saved.
8 Fill-in the cells in the sample row.
   - It is possible to copy and paste or increment values in some columns. For more information, see Additional Copy/Paste Options.
   - Well variables can be satisfied graphically. For more information, see Bed Layout View Tab.
9 Repeat steps 2–8 for each additional sample. If necessary, add rows to the sample list (see Add Row or Add Multiple Rows).
10 Optionally, set initial volumes. For more information, see Set Initial Volumes.
11 Optionally, schedule the application. For more information, see How to Schedule an Application.
12 Click **Save** to save the sample list as the application.

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 (except mobile wells) in each bed layout in the application, do the following:

1 Create the sample list. For more information, see How to Create a Sample List.
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 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 two ways to clear initial volumes that have been set:

- Select the rows, right-click, and then select **Delete**.
- Click **Clear Info**. The grid is cleared.

Reset Volumes

As aspirations occur, the volumes in the tubes decrease. Volumes are not automatically reset after a run or simulation. To reset volumes to the initial volumes that were set, 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 Schedule an Application

Scheduling an application can make more efficient use of the liquid handling instruments by taking advantage of significant wait times to run multiple methods in parallel to shorten run times.

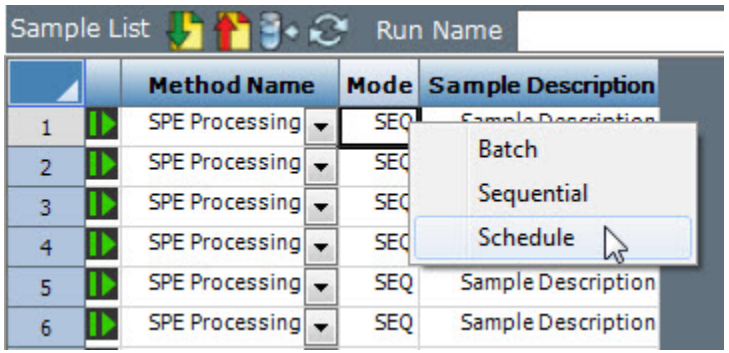
After creating the sample list, optionally schedule all or part of the application.

1 Open the Application builder in either of the following ways:
- On the **Liquid Handling** menu, select **Application**.
- Open or save a method in the Method Builder, and then click **Run**.

2 Create the sample list. For more information, see How to Create a Sample List.

3 Create a schedule group, composed of one or more rows in the sample list that will be scheduled together. Samples in a schedule group can be processed in any order, which makes running methods with significant wait times more efficient.
- To schedule one row per schedule group, select the row, right-click the cell in the **Mode** column, and then select schedule (**SCH**) mode.
- To schedule one or more rows in a schedule group, select the row(s), right-click, and then select **Schedule**.

When scheduled, all rows in a schedule group will be highlighted with the same color.



NOTE	Each schedule group must include a method with a Wait (Scheduled) task.

4 Optionally, right-click on a column name and then toggle desired columns to show or unneeded columns to hide.
- The Schedule Group column indicates the rows that will be grouped together when running in schedule mode.

5 Repeat steps 3–4 for additional schedule groups.

6 Click **Save**.

During the run, the progress of each schedule group can be monitored. For more information, see Schedule Tab.

NOTE	Tasks with unknown durations, such as Wait for Contact, Prompt, Prompt for Input, Run Executable, and Wait with Display cannot be scheduled. Methods that use GEARS devices cannot be scheduled.

Unschedule a Scheduled Group

To unschedule a scheduled group, do either of the following:

- Right-click the cell in the Mode column and then select Sequential or Batch mode. All rows in the scheduled group will be changed to this mode.
  - **Sequential** - In Sequential (SEQ) mode, each sample is fully processed using all tasks in the method before continuing to the next sample.
  - **Batch** - In Batch (BAT) mode, all samples are processed in order using the first task in the method. Then all samples are processed in order using the second task in the method, and so on.
- Select one or more rows, right-click, and then select **Unschedule**. The selected rows are set to Sequential (SEQ) mode.

How to Export a Sample List

HOW TO EXPORT A SAMPLE LIST

1 In the Application window, click the Sample List Export ( ) button.
2 Select a folder and then click **Save**. The sample list is saved in the specified folder with a .TSL extension.

MODIFY A SAMPLE LIST IN MICROSOFT® EXCEL®

1 After the Sample List has been exported, right-click on the file in Windows Explorer and then select **Properties.**
2 Associate .TSL files with Microsoft® Excel® and then double-click to open the file in Excel.

NOTE	If additional columns appear in your Sample List when it is opened in Excel, this is expected; however, DO NOT delete them.

3 Make desired changes 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	Initial Volumes cannot be modified, and Mode should not be set to Schedule in Excel.

How to Import a Sample List

1 In the Application window, click the Sample List Import ( ) button to display the Import window.
2 On the Import window, do the following:
   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, complete the following:
   a) To view the log information of the import operation, click **Details**.
   b) Click **OK**.

NOTE	**Because a sample list includes information about the methods, the methods must exist for the sample list to import.**

How to Export Applications

1 In the Application builder, click **Export**. The Select items to Export window appears.
2 In the Select items to Export window, complete the following:
   a) In the Select the items to be exported field, select the applications.
   b) In the Select a path field, do one of the following:
      - Accept the default path of **C:\Documents and Settings\OS User Name\My Documents\TRILUTION LH x.x\Export**.
      - Click ... 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 Click **OK**. On completion of the export operation, the application (with its embedded methods) is saved in the specified folder with a .LHAE extension.

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

4 When the export success/fail dialog appears, do the following:
   - To view the log information of the export operation, click **Details**.
   - Click **OK**.

How to Import Applications

1 In the Application builder, click **Import**. The Select Application Exported Files window appears.

2 On the Select Application Exported Files window, complete the following:

a) Browse for and select the Application Exported (.LHAE) files.

b) Click **Open**. Some or all of the following dialogs will appear:

- 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.
- If a method or method component (configuration, bed layout, or error handling) with the same name already exists on the system, a dialog appears with options for importing the method and components. Enter a new name for the method, leave the current name to overwrite the existing method, or click **Skip** to skip the import operation for that method.

  If the method components are the same as the existing, the name is shown, but cannot be changed. If a difference is detected, enter a new name for the component or leave the current name to overwrite the existing component.
- If an application with the same name already exists on the system, a dialog appears with options to import the application or all applications as a new version (overwrite), rename the application, or skip the import operation for that application.
- A dialog appears with an option to select a folder in which to save the application to or select a folder to which all applications from the import operation will be saved. A new folder can be created from this dialog by clicking **New**.

3 When the import success/fail dialog appears, do the following:

- To view the log information of the import operation, click **Details**.
- Click **OK**.

Run Results

During the run, the software generates reports and a log. See Reports and Run Results for more information.

RUNNING AN APPLICATION

The Application Builder is where you start a run (see How to Start a Run) and monitor the progress of a run (see During a Run).

While the run is in progress, it is possible to modify steps that have not yet been executed. This includes modifying a method. For more information, see Modify a Running Method.

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, samples are in place, etc.).
2 Check that the correct application is open.
3 Optionally, simulate the application run:
   a) Select the **Simulation** tab.
   b) Select a simulation speed: Fast, Medium, or Slow. The default is Fast.
   c) Click **Simulate**.

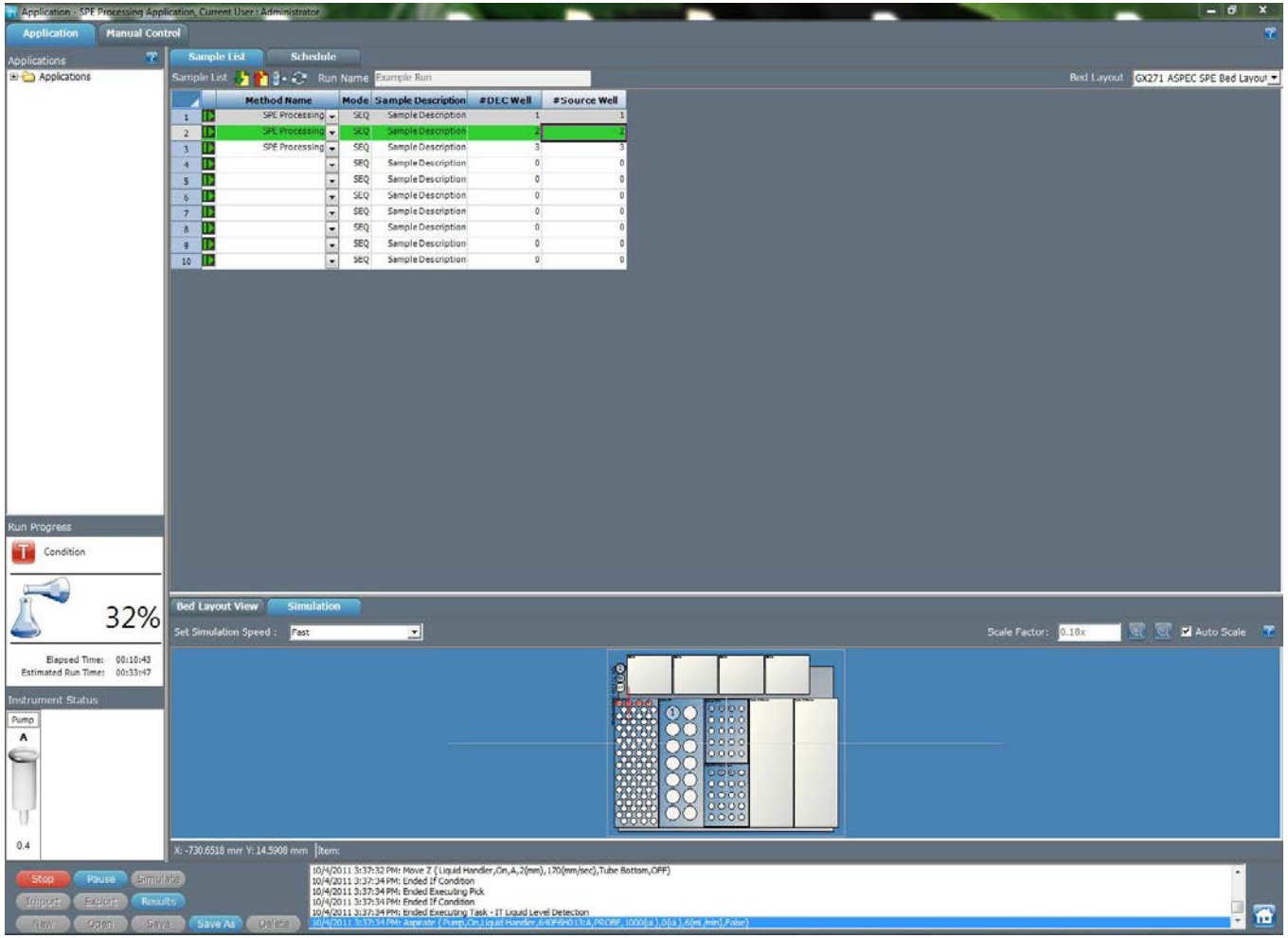
   If an error is encountered during the simulation, the simulation is paused, and a dialog appears. Click **Stop** to stop the simulation or click **OK** to continue running the simulation. Optionally, review the log (see View the Log File) for the cause of the error.
4 Click **Run** in the Application Builder.

During a Run

DURING A RUN

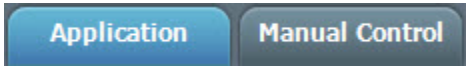
When the run starts, you may want to focus your attention on the Application Builder window, which includes the following:

- Title Bar
- Application Tab
- Manual Control Tab
- Applications Palette
- Run Progress Indicator
- Instrument Status
- Sample List Tab
- Schedule Tab
- Run Name
- Bed Layout
- Action Buttons
- Bed Layout View Tab
- Simulation Tab
- Info Window



TITLE BAR

The title bar displays the name of the running application and the name of the logged-on user.



APPLICATION TAB

If using manual control (not available while running), click to return to the application.

MANUAL CONTROL TAB

Manual control is not accessible while running.

APPLICATIONS PALETTE

Lists the applications.

Right-click Menu

Applications Palette

Right-click in the Applications palette to display the following options:

MENU	DESCRIPTION
New Folder	Displays the New Folder dialog for creating a new top-level folder.
New Application	Allows for creating a new application.
Paste Application	Pastes a copied application with a new name in the selected folder.

Folder

Right-click on a folder in the Applications palette to display the following options:

MENU	DESCRIPTION
New Folder	Displays the New Folder dialog for creating a new folder in the selected folder.
Rename Folder	Allows for renaming the selected folder.
Delete Folder	Deletes the folder if empty.
New Application	Allows for creating a new application.
Paste Application	Pastes a copied application with a new name in the selected folder.

Application

Right-click on an application in the Applications palette to display the following options:

MENU	DESCRIPTION
New Application	Allows for creating a new application.
Open Application	Displays the Open Application dialog for opening an existing application.
Delete Application	Allows for deleting the selected application or all versions of the application.
Copy Application	Copies the application for pasting in another folder.

RUN PROGRESS INDICATOR

The Run Progress Indicator is a graphical representation of the progress of the run or simulation.

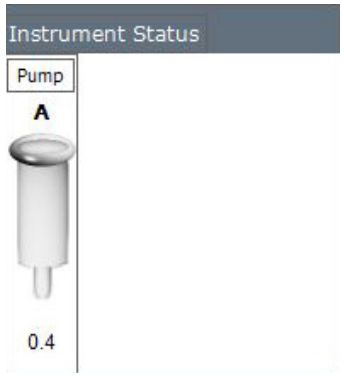
It displays the following:

- name of the current task or operator
- elapsed time
- estimated run time (displayed only if the saved application is simulated first and no changes are made before or during a run)
- percentage completed (based on the elapsed time compared to the estimated run time and displayed only if the saved application is simulated first and no changes are made before or during a run)

NOTE	The estimated run time cannot be determined for tasks with unknown durations, such as Wait for Contact, Prompt, Prompt for Input, Run Executable, and Wait with Display. The estimated run time cannot be determined for applications that use GEARS devices.

For more information about running a simulation, see Simulation Tab

INSTRUMENT STATUS



The Instrument Status display is used to monitor the pressure of the 406 Pump Single, 406 Pump Dual, VERITY 4060 Syringe Pump, or VERITY 4260 Syringe Pump during the run. For information about how set up pressure error handling, see How to Set Up Instrument Error Handling.

SAMPLE LIST TAB

If viewing the scheduling chart for an application, click to return to the sample list.

The current running steps are highlighted green in the sample list; completed steps are grayed.

All rows in a schedule group are highlighted with the same color. For more information about setting up schedule groups, see How to Schedule an Application.

If sample list rows are added or modified while running, the added or modified rows will be set to pause. To resume the run (unpause the rows), select the rows, right-click to access the **Set Rows** option, and then select **Run**.

Right-click Options

The following options are available after right-clicking on a pending row:

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

Sample List Toolbar

Click an icon to activate its function in the sample list as described below:

ICON	DESCRIPTION
	Not available while running or simulating a run.
	Saves the current sample list to a selected location as a .TSL file. For more information, see How to Export a Sample List.
	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).

	Not available while running or simulating a run.

Right-click Menu

Select a pending (not completed or running) row and then right-click to display the following options:

MENU	DESCRIPTION
Add Row	Adds the first row to a new list or adds a row to the bottom of the list.
Add Multiple Rows	Adds a user-specified number of rows to the bottom of the list.
Insert Row	Adds a row between two existing rows.
Clear Row	Clears a row of all values but keeps the row in the sample list.
Delete Row	Removes a row from the sample list.
Paste Row Special	Pastes a user-specified number of copies of the selected row after the selected row. If the copied row was scheduled, the pasted rows will be assigned to the same schedule group.
Open Method	Opens the method in the selected row in the Method Builder.
Schedule	Sets the row to Schedule (SCH) mode, which optimizes processing samples in methods with significant wait time in an efficient manner.
Unschedule	Changes the mode for the selected sample(s) from Schedule (SCH) to Sequential (SEQ).
Set Rows	Provides the option to set all selected rows to Run, Skip, or Pause.

Additional Copy/Paste Options

The sample list control in TRILUTION LH includes options for copying and incrementing within a column 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, Mode, and Schedule Group 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.
- If the copied row was scheduled and is being pasted below another scheduled row, the pasted row will be assigned to the same schedule group as the row above it.
- If the copied row was scheduled and is being pasted below a running scheduled row, the pasted row will be assigned to a new schedule group.
- If the copied row was scheduled and is being pasted below an unscheduled row, the pasted row will be assigned to a new schedule group.

SCHEDULE TAB

Click to view the chart for a running, schedule group.

- While the software determines the schedule, it displays "Scheduling Run".
- The chart shows the progress of scheduled rows in a schedule group. Hover over a bar in the chart to view the tooltip, which provides information about the sample, including values for any variables in the sample list.
- While running scheduled rows, the run cannot be paused.

Before setting up schedule groups, create the sample list. For more information, see How to Create a Sample List.

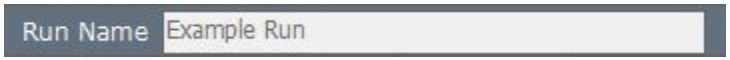
Toolbar

ICON	DESCRIPTION
	Makes the viewable time scale shorter.
	Makes the viewable time scale longer.
	Enlarges lassoed portion of the chart.
	Selects the cursor (zoom disabled).
	Auto-scales both axes to minimum and maximum values.
	Auto-scales the X-axis (Time) to minimum and maximum values.
	Auto-scales Y-axis (Sample List: Iteration) to minimum and maximum values.
	Displays the chart using elapsed time. (Default)
	Displays the chart using actual time.
	Displays the chart with a dark background. (Default)
	Displays the chart with a light background.

Legend

COLOR	LABEL	DESCRIPTION
	Completed	Indicates that the method (or iteration of the method) is complete.
	Task (active)	Indicates that tasks in the method (or iteration of the method) are running.
	Task (in progress)	Indicates that tasks in the method (or iteration of the method) have completed execution.
	Wait (in progress)	Indicates that the wait in the method (or iteration of the method) is in progress.
	Task (scheduled)	Indicates tasks in the method (or iteration of the method) that have not started running.
	Wait (scheduled)	Indicates a wait in the method (or iteration of the method) that has not yet started.

RUN NAME



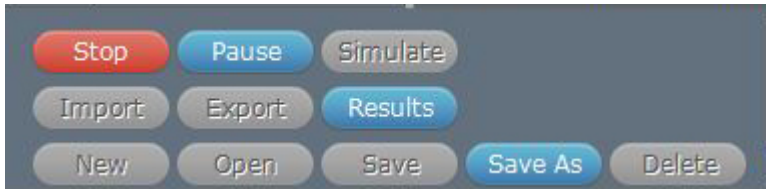
The run name field displays the name of the run.

BED LAYOUT

The Bed Layout drop-down is available so that samples can be added to the sample list while running.

Select a bed layout from the drop-down list to display methods using that bed layout. Only methods using that bed layout will be available to choose when adding samples to the sample list.

ACTION BUTTONS



The following action buttons are located in the lower left corner of the Application window.

ACTION BUTTON	DESCRIPTION
Run/Stop	Starts the application run and changes the button text to Stop. Click **Stop** to stop the run or simulation.
Pause/Resume	This option causes the run to pause task execution. To continue the task execution, click **Resume**. The run will continue as programmed. Pause is not available while running or simulating steps/samples in Schedule (SCH) mode.
Simulate	Not available while running or simulating a run.
Import	Not available while running or simulating a run.
Export	Not available while running or simulating a run.
Results	Opens the Run Results window. From this window, results can be viewed, exported, archived, restored, or refreshed. For more information, see Run Results.
New	Not available while running or simulating a run.
Open	Not available while running or simulating a run.
Save	Saves an application that was modified while running to the same name.
Save As	Saves a new application or saves an existing application to a new name. Optionally, type a description.
Delete	Not available while running or simulating a run.

BED LAYOUT VIEW TAB

The Bed Layout View Tab can be used when modifying a sample list during a run. While modifying a row, that row will be set to pause. When finished making modifications to a row and to resume the run, set the row to run. If multiple rows were modified (and are paused), select the rows, right-click to access the **Set Rows** option, and then select **Run**.

1 Select a method containing a well variable.
2 Place the cursor in the first cell for which you will be selecting a well.
3 If not selected, click to select the **Bed Layout View** tab.
4 Select a **Zone** from the drop-down list. Available wells appear highlighted in the active zone color.
5 Choose multiple well locations.
- To select random wells within one zone, press the **CTRL** key and select each well.
- To select a range of wells within one zone, click and drag over a block of wells.

Note: Zoom, if necessary. For more information, see Zoom

6 Select the mode in which the samples should be processed by clicking **Seq. Single**, **Seq. Multiple**, or **Batch**.

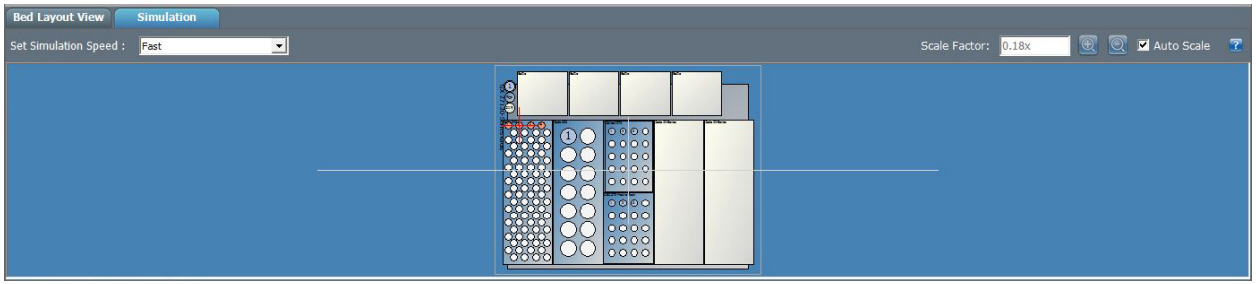
If **Seq. Single**, all wells selected will be added as one row in the sample list and the mode will be set to Sequential. In Sequential (SEQ) mode, each sample is fully processed using all tasks in the method before continuing to the next sample.

If **Seq. Multiple**, each well selected will be added as its own row in the sample list and the mode will be set to Sequential. In Sequential (SEQ) mode, each sample is fully processed using all tasks in the method before continuing to the next sample.

If **Batch**, all wells selected will be added as one row in the sample list and the mode will be set to Batch. In Batch (BAT) mode, all samples are processed in order using the first task in the method. Then all samples are processed in order using the second task in the method, and so on.

SIMULATION TAB

During a run, probe movement is represented by red crosshairs and simulated on the Simulation tab.



INFO WINDOW

Lists run-time events, the time they occurred, and the iteration and sample list row numbers. After the run, this information can be viewed in the log file. For more information, see View the Log File.

Interrupt a Run or Simulation

Optionally, pause or terminate a run in progress.

PAUSE A RUN OR SIMULATION

To pause a run, click **Pause**. Click **Resume** to continue task execution beginning at the time of the pause.

Pause is not available while running or simulating scheduled rows.

STOP A RUN OR SIMULATION

To stop the run or simulation, click **Stop**.

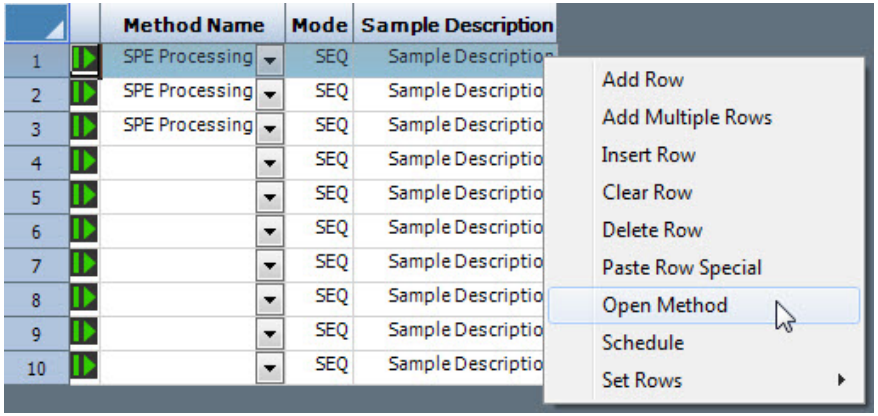
Modify a Running Method

A running method can be modified. Changes to the method will take effect on the next sample using that method.

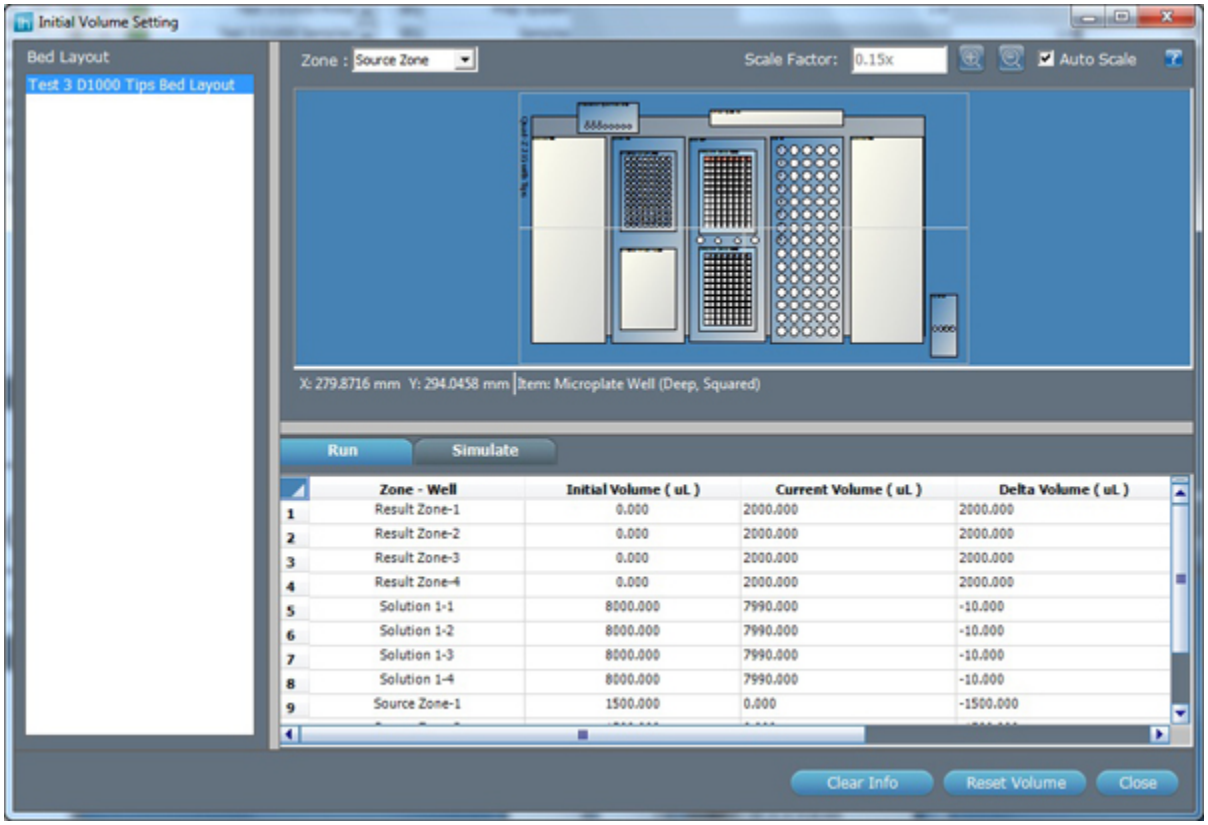
NOTE	Variables should not be added to a running method. (There is no way to refresh the sample list while running so that they can be used.)

To modify a running method:

1 Select the sample row, right-click, and then select **Open Method**.
2 Modify and then save the method.
Changes to the method will take effect on the next sample using that method in the sample list.
3 Close the Method Builder.



After a Run



A run is complete when the software has finished processing all of the samples in the sample list (or after clicking **Stop**). If the run completes with errors, optionally check the log (see 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).

VIEW THE LOG FILE

To display the log file produced during a run:

1 Access the Run Results by clicking **Liquid Handling** | **Utilities** | **Run Results** or by clicking **Results** in the Application Builder.
2 Locate the run for which you want to view the log.
3 Click **View Log** or 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).

NOTE	Neither the VERITY 4060 Syringe Pump nor the VERITY 4260 Syringe Pump has a front panel display to display an error code if an error is encountered. To obtain the error code and message, view the log file produced during the run.

APPLICATION - MANUAL CONTROL

In addition to application runs, the software also provides manual control over Gilson instruments in the configuration. Manual control is useful for preparing a system for a run.

Note: Before running your system in manual mode, be sure that the instruments in the system are turned on and the appropriate connections are made as described in each user's guide.

Manual control is accessed by clicking the Manual Control tab in the Application Builder.

Manual Instrument Control

For manual control to occur, TRILUTION LH needs the configuration and bed layout information set in the method.

Do the following to set which method information will be used for manual control:

1 Open the Application Builder.
2 Select a method.
3 Select the Manual Control tab.
4 Select a method from the drop-down list of methods.
5 Click **Go**. The instruments will initialize.

Manual Control Properties by Instrument

The following instruments have a set of manual moves available:

INSTRUMENT NAME		
215 Liquid Handler	845Z Injection Module	GX-281 Analytical Liquid Handler
215 Liquid Handler without Pump	GX Syringe Pump	GX-281 Liquid Handler without Pump
223 Sample Changer	GX-241 II ASPEC without Pump	GX-281 Prep Liquid Handler
402 Pump Dual	GX-241 II Liquid Handler without Pump	Minipuls 3
402 Pump Dual with Tee	GX-271 Analytical Liquid Handler	Quad-Z 215
402 Pump Single	GX-271 ASPEC without Pump	VALVEMATE II
406 Pump Dual	GX-271 Liquid Handler without Pump	VERITY 4020 Syringe Pump
406 Pump Single	GX-271 Prep Liquid Handler	VERITY 4060 Syringe Pump
506C System Interface	GX-274 ASPEC without Pump	VERITY 4120 Dual with Tee Syringe Pump
819 Injection Module	GX-274 Liquid Handler without Pump	VERITY 4220 Syringe Pump
		VERITY 4260 Syringe Pump

215 Liquid Handler

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

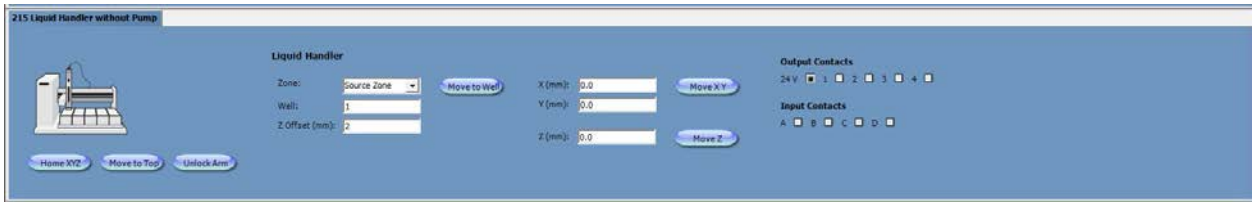
215 Liquid Handler Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			

A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

215 Liquid Handler without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



215 Liquid Handler without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

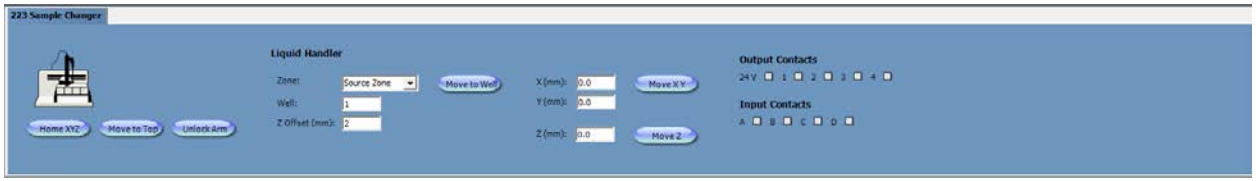
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

223 Sample Changer

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



223 Sample Changer Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

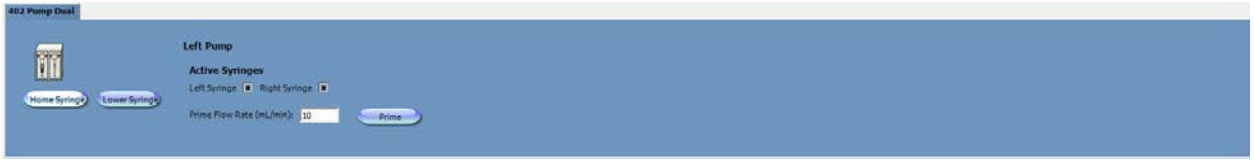
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

402 Pump Dual

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



402 Pump Dual Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Active Syringes	The syringes that will be used.	Left Syringe, Right Syringe	Click **Prime** to start or **Stop Prime** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Buttons			
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the active syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Dual with Tee

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

402 Pump Dual with Tee Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the syringes' piston operating rods 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Single

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

402 Pump Single Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

406 Pump Dual

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

406 Pump Dual Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Active Syringes	The syringes that will be used.	Left Syringe, Right Syringe	Click **Prime** to start or **Stop Prime** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Buttons			
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the active syringe's piston operating rod 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

406 Pump Single

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

406 Pump Single Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the syringe's piston operating rod 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

506C System Interface

506C System Interface Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Output Contacts			
1 2 3 4 5 6	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

819 Injection Module

819 Injection Module Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Valve Position	Rotates the valve to the selected position.	Inject	Click **Switch**.

845Z Injection Module

845Z Injection Module Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Valve Position	Rotates the valve to the selected position.	Inject	Click **Switch**.

GX Syringe Pump

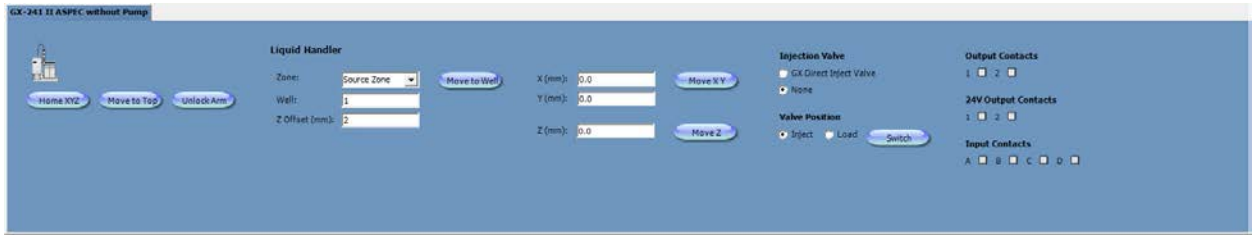
NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

GX Syringe Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Descends the syringe's piston operating rod 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

GX-241 II ASPEC without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



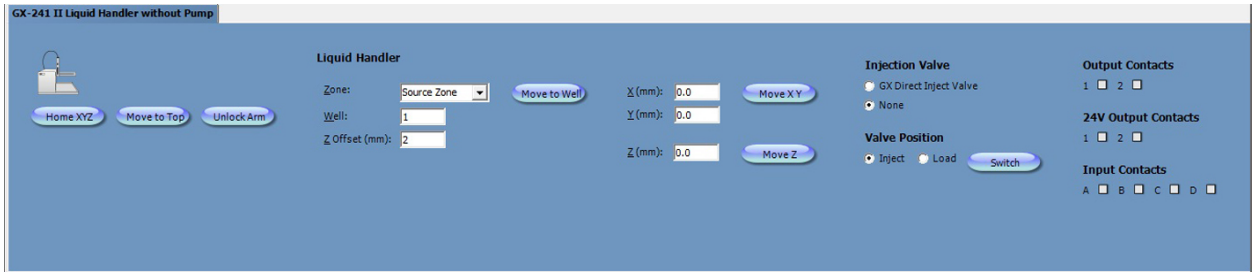
GX-241 II ASPEC without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the valve to the selected position.		Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-241 II Liquid Handler without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



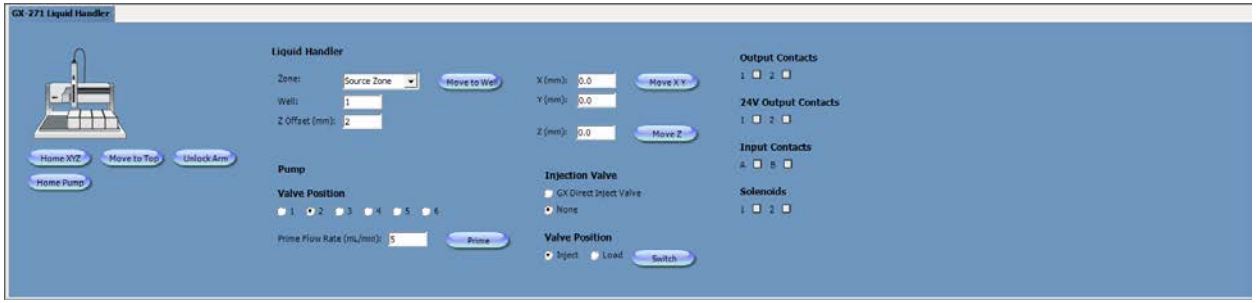
GX-241 II Liquid Handler without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the valve to the selected position.		Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-271 Analytical Liquid Handler

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



GX-271 Analytical Liquid Handler Manual Control

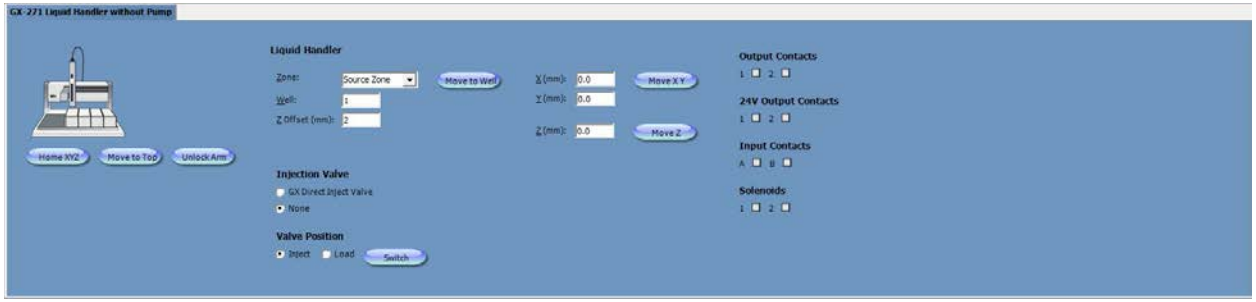
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the	2 mm	
X	Enter a number to move to a position to the	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Pump			
Valve Position	Select the solvent selection valve position to use when priming.	2	Click **Prime**.
Prime Flow Rate	The speed at which the solvent moves out of the probe.	5 mL/min	
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the injection valve to the selected position.		Click **Switch**.

Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		
Home Pump	Homes the solvent system.		

GX-271 Liquid Handler without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



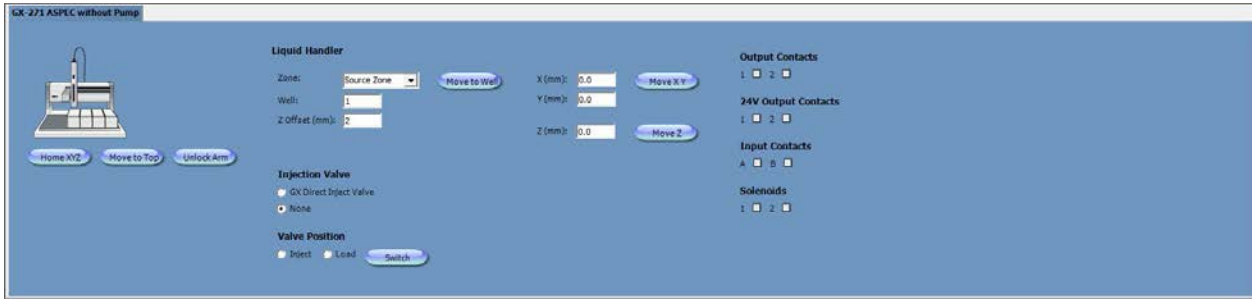
GX-271 Liquid Handler without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z.**
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the valve to the selected position.	Inject	Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-271 ASPEC without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



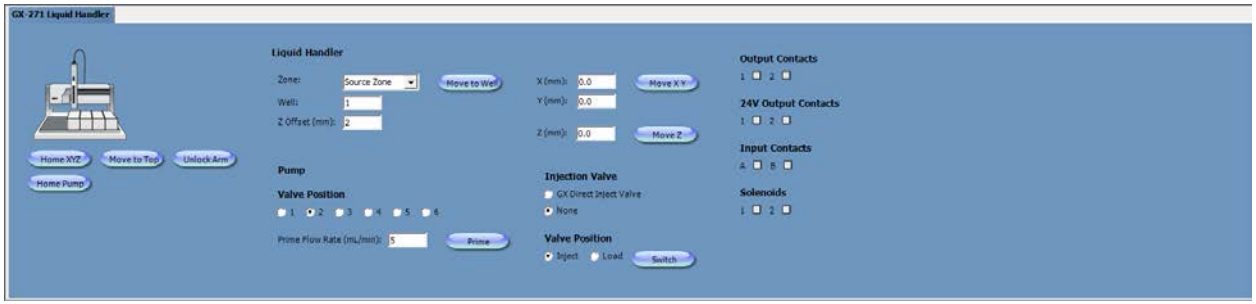
GX-271 ASPEC without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the valve to the selected position.		Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-271 Prep Liquid Handler

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



GX-271 Prep Liquid Handler Manual Control

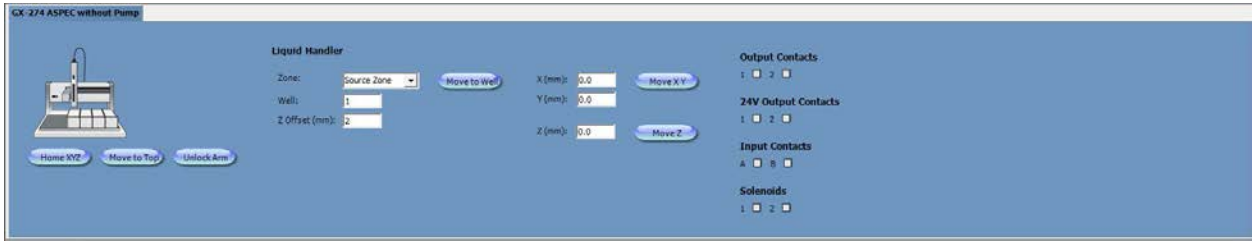
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Pump			
Valve Position	Select the solvent selection valve position to use when priming.	2	Click **Prime**.
Prime Flow Rate	The speed at which the solvent moves out of the probe.	5 mL/min	
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the injection valve to the selected position.		Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		

Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		
Home Pump	Homes the solvent system.		

GX-274 ASPEC without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



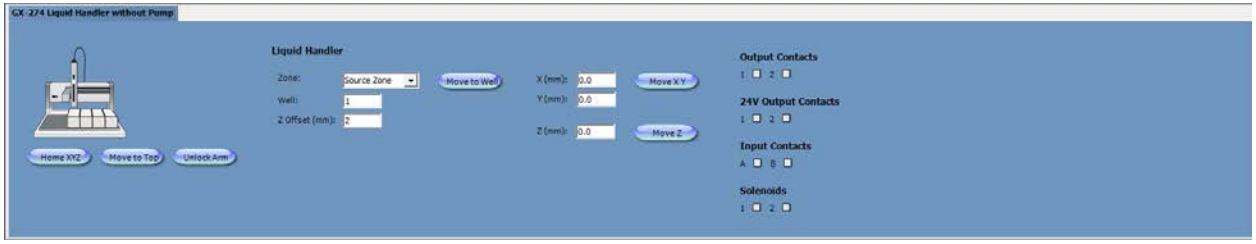
GX-274 ASPEC without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone to which probe A will move.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-274 Liquid Handler without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



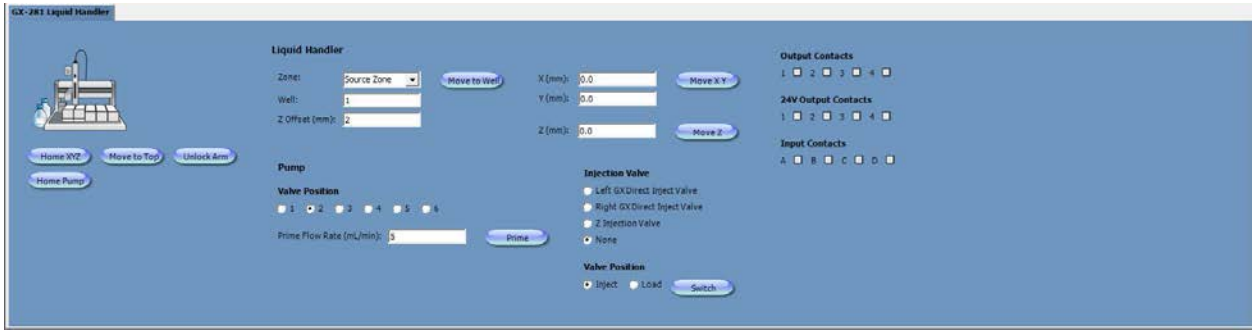
GX-274 Liquid Handler without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone to which probe A will move.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-281 Analytical Liquid Handler

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



GX-281 Analytical Liquid Handler Manual Control

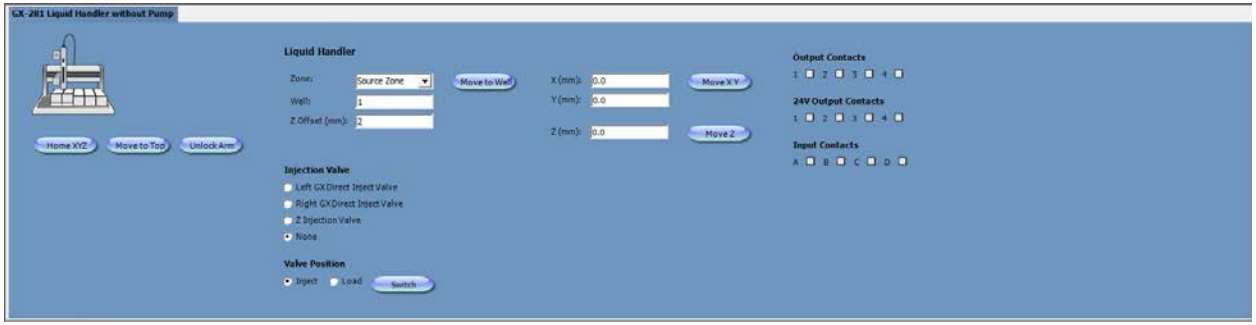
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Valve Position	Rotates the solvent selection valve to the selected position.	2	Click **Prime**.
Prime Flow Rate	The speed at which the solvent moves out of the probe.	5 mL/min	
Injection Valve	Indicate which GX Direct Inject Valve is installed, if any.	None	
Valve Position	Rotates the valve to the selected position.	Inject	Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		

Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		
Home	Homes the solvent system.		

GX-281 Liquid Handler without Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



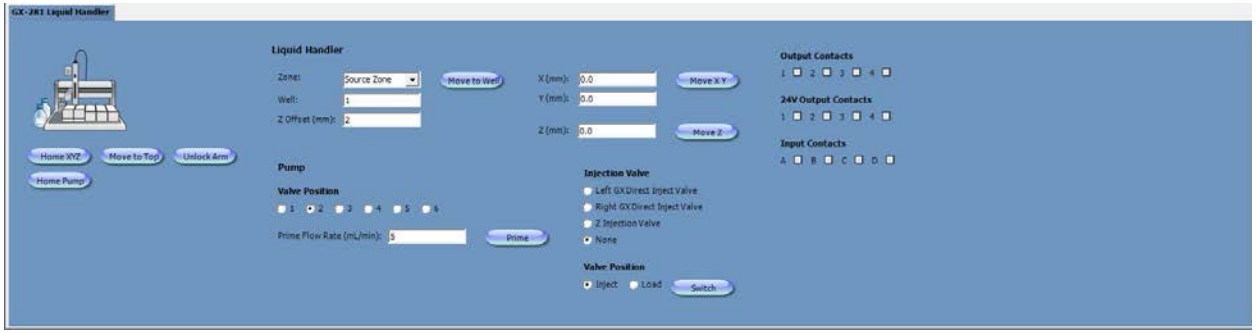
GX-281 Liquid Handler without Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Injection Valve	Indicate which GX Direct Inject Valve is installed, if any.	None	
Valve Position	Rotates the valve to the selected position.	Inject	Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

GX-281 Prep Liquid Handler

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



GX-281 Prep Liquid Handler Manual Control

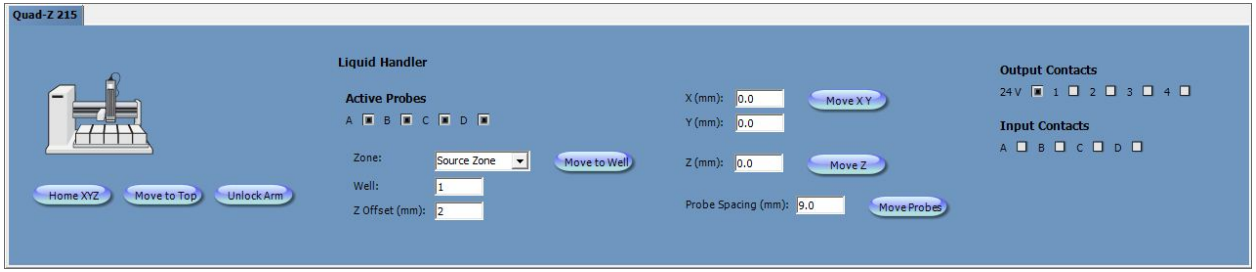
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Valve Position	Rotates the solvent selection valve to the selected position.	2	Click **Prime**.
Prime Flow Rate	The speed at which the solvent moves out of the probe.	5 mL/min	
Injection Valve	Indicate which GX Direct Inject Valve is installed, if any.	None	
Valve Position	Rotates the valve to the selected position.	Inject	Click **Switch**.
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the Configuration.		

Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		
Home Pump	Homes the solvent system.		

Quad-Z 215

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



Quad-Z 215 Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Liquid Handler			
Active Probes	The probes that will be used.	A, B, C, D	
Zone	The zone to move to.		Click **Move to Well**.
Well	Enter the well number in the zone.	1	
Z Offset	Enter a positive value to move up from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **Move XY**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **Move Z**.

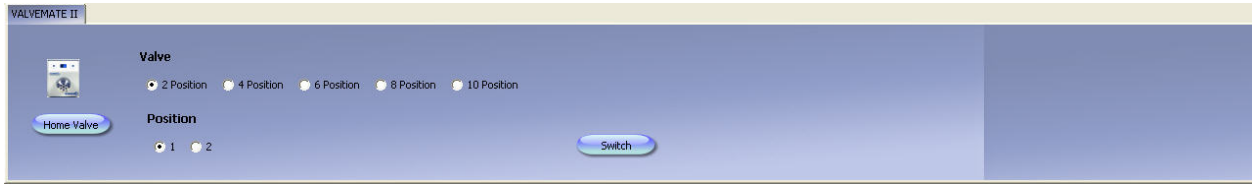
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Probe Spacing	Enter a value between 9.0 and 18.0.	9.0 mm	
Buttons			
Home XYZ	Moves probe to the home position.		
Move to Top	Positions the probe at the Z Safe Height specified in the configuration.		
Unlock Arm	Unpowers the X, Y, and Z motors.		
Lock Arm	Powers all motors and moves the probe to the home position.		

Minipuls 3

Minipuls 3 Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the solvent moves out of the probe.	10 mL/min	Click **Prime**.

VALVEMATE II

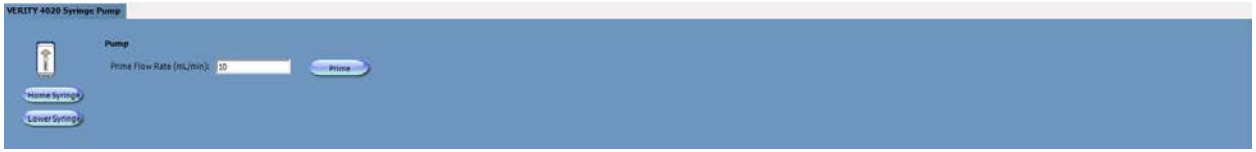


VALVEMATE II Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Valve	The number of ports in the VALVEMATE II valve.	2	
Position	Rotates the valve to the selected position.	1	Click **Switch**.
Button			
Home Valve	Rotates the valve to the position selected in the configuration.		

VERITY 4020 Syringe Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

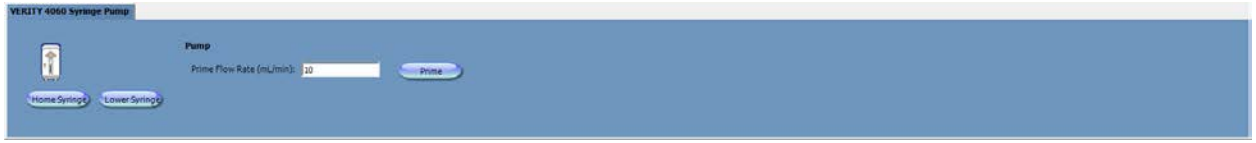


VERITY 4020 Syringe Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the syringe and sends the piston to the upper position with the valve in the probe position.		
Lower Syringe	Lowers the piston operating rod 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the syringe and sends the piston to the upper position with the valve in the probe position.		

VERITY 4060 Syringe Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



VERITY 4060 Syringe Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the syringe and sends the piston to the upper position and the valve to the probe position.		
Lower Syringe	Lowers the piston operating rod 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the syringe and sends the piston to the upper position and the valve to the probe position.		

VERITY 4120 Dual with Tee Syringe Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

VERITY 4120 Dual with Tee Syringe Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the syringes and sends the pistons to the upper position with the valve in the probe position.		
Lower Syringe	Descends the syringes' piston operating rods 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the syringes and sends the pistons to the upper position with the valve in the probe position.		

VERITY 4220 Syringe Pump

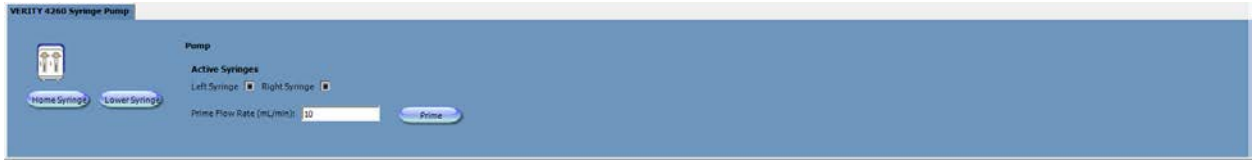
NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.

VERITY 4220 Syringe Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Active Syringes	The syringes that will be used.	Left Syringe, Right Syringe	Click **Prime** to start or **Stop Prime** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Buttons			
Home Syringe	Homes the active syringe(s), which sends the piston to the upper position and the valve(s) to the probe position.		
Lower Syringe	Lowers the piston operating rod for the active syringe(s) 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the active syringe(s), which sends the piston to the upper position and the valve(s) to the probe position.		

VERITY 4260 Syringe Pump

NOTICE	TRILUTION LH does not validate any values or check for safe movement in manual control. Verify entries before clicking any buttons.



VERITY 4260 Syringe Pump Manual Control

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE	USE
Active Syringes	The syringes that will be used.	Left Syringe, Right Syringe	
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	Click **Prime** to start or **Stop Prime** to end.
Buttons			
Home Syringe	Homes the active syringe(s), which sends the piston to the upper position and the valve(s) to the probe position.		
Lower Syringe	Lowers the piston operating rod for the active syringe(s) 25% of a full stroke.		Used when replacing a syringe.
Raise Syringe	Homes the active syringe(s), which sends the piston to the upper position and the valve(s) to the probe position.		

RUN RESULTS

Access the Run Results by clicking **Liquid Handling** | **Utilities** | **Run Results** or by clicking **Results** in the Application Builder.

Double-click the run name to display the result.

Key concepts to understand about run results are:

- How to View Run Results
- How to Export Run Results
- How to Archive Run Results
- How to Restore Run Results

Run 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.

NOTE	**To sort the run results, click on a column header. To sort in reverse order, click the column header again.**

For information about how to view a run result, see How to View Run Results.

ACTION BUTTONS

The following action buttons are located in the lower left corner of the Run Results window.

ACTION BUTTON	DESCRIPTION
View Log	Opens the log file detailing information from the info window during the run in Microsoft® Notepad.
Export	Exports a copy of the run results to a specified location as a .LHRE file. For more information, see How to Export Run Results.
Archive	Moves the run results to a specified location as a .LHRE file. For more information, see How to Archive Run Results.
Restore	Imports an exported or archived .LHRE file and lists the run result in the Run Results window. For more information, see How to Restore Run Results.
Refresh	Reloads the window with any new or imported run results.
Close	Exits the Run Results window.

RIGHT-CLICK MENU

MENU	DESCRIPTION
View Log	Opens the log file detailing information from the info window during the run in Microsoft® Notepad.
Rename Run	Allows for assigning a different name to a run.
Export Result	Exports a copy of the run results to a specified location as a .LHRE file.
Archive Result	Moves the run results to a specified location as a .LHRE file.
Restore Result	Imports a .LHRE file and lists the run result in the Run Results window.

How to View Run Results

To view the run results (log) for a run or simulation, do the following in the Run Results window:

1 From the drop-down menu, select the application that was run or simulated to create the results.

2 Ensure that Include Run is selected to view results from a run or ensure that Include Simulation is selected if the results are from a simulation.

3 Double-click the run name to display the result.

How to Export Run Results

1 On the Run Results window, select the run name and then do either of the following:
   - Click **Export**.
   - Right-click and then select **Export Result**.
2 On the Browse for Folder window, select a folder and then click **OK**. The run results (and the embedded application, methods, and tasks) are exported. On completion of the export operation, the run results are saved in the specified folder with a .LHRE extension.
3 When the export operation success/fail dialog appears:
   - To view the log information of the export operation, click **Details**.
   - Click **OK**.

How to Archive Run Results

Archive run data before deleting applications.

1 On the Run Results window, select the run name and then do either of the following:
   - Click **Archive**.
   - Right-click and then select **Archive Result**.

NOTE	**The difference between export and archive is that export leaves the results in the Run Results window, whereas archive removes it. Both allow the data to be restored.**

2 On the Browse for Folder window, select a folder and then click **OK**. The run results (and the embedded application, methods, and tasks) are archived. On completion of the archive operation, the run results are saved in the specified folder with a .LHRE extension.
3 When the archive operation success/fail dialog appears:
   - To view the log information of the archive operation, click **Details**.
   - Click **OK**.

How to Restore Run Results

Restore runs that have been exported or archived.

1 On the Run Results window, click **Restore**.
2 Browse for and select the Run Archived Files.
3 Click **Open**. The run results (and application, methods, and tasks) are restored. On completion of the import (restore) operation, the import success/fail dialog appears.

NOTE	If a task or any task placed within a task with the same name is found, an option is provided to import the task as a new version, import all tasks as new version, skip the import of all tasks, or rename the task.

4 When the import operation success/fail dialog appears:
- To view the log information of the import operation, click **Details**.
- Click **OK**.

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 LH: 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 available in all methods and tasks and 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

To create a variable:

1 On the Method Builder - Method tab or in the Custom Task Builder window, do one of the following:
   - Click  , which opens the advanced 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. For more information about variable types, see Variable Types.
   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 (if creating a task variable) or in the sample list (if creating a method variable), 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, add values to the Value List by typing the value (only available in the advanced Variable Properties dialog). Values entered in this list display as drop-down values in the task or method in which the variable is used. Values in this list are not displayed in the sample list.

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 or for a task or command property in the Custom Task 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. Variable names are NOT case-sensitive (#WELL = #Well).

3 Click **Add**. Repeat 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 or in the method, click the arrow to open the advanced Variable Properties dialog and then select Visible in Method/Task (depending on the builder). To make all global variables available for use in the task or in the method, click Select All. To clear the Visible in Method/Task (depending on the builder) selection for all global variables, click Deselect All.

View or Filter Variables

VIEW VARIABLES

To view variables, do either of the following on the Method Builder - Method tab or in Custom Task Builder window:

- Click  .
- Drag the Variable operator () and then drop it in the workspace. When the Variable Properties dialog appears, click the arrow to display the advanced options.

All variables and their properties are listed in the Variable List.

Global Variables are listed in the Global Variable List.

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, do the following:

1 On the Method Builder - Method tab or in Custom Task Builder window, do one of the following:
   - Click  .
   - Drag the Variable operator () and then drop it in the workspace. When the Variable Properties dialog appears, click the arrow to display the advanced options.
2 By default, the option for Show All Variables is selected for the Variable List. All local variables are displayed and all global variables for which Visible in Method 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, do the following:

1 On the Method Builder - Method tab or in Custom Task Builder window, do one of the following:
   - Click V..
   - Drag the Variable operator (i = 0) and then drop it in the workspace. When the Variable Properties dialog appears, click the arrow to display the advanced options.
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**.

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, do the following:

1 On the Method Builder - Method tab or in Custom Task Builder window, do either of the following:
   - Click V.
   - Drag the Variable operator (i = 0) and then drop it in the workspace. When the Variable Properties dialog appears, click the arrow to display the advanced options.
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**.

REPORTS

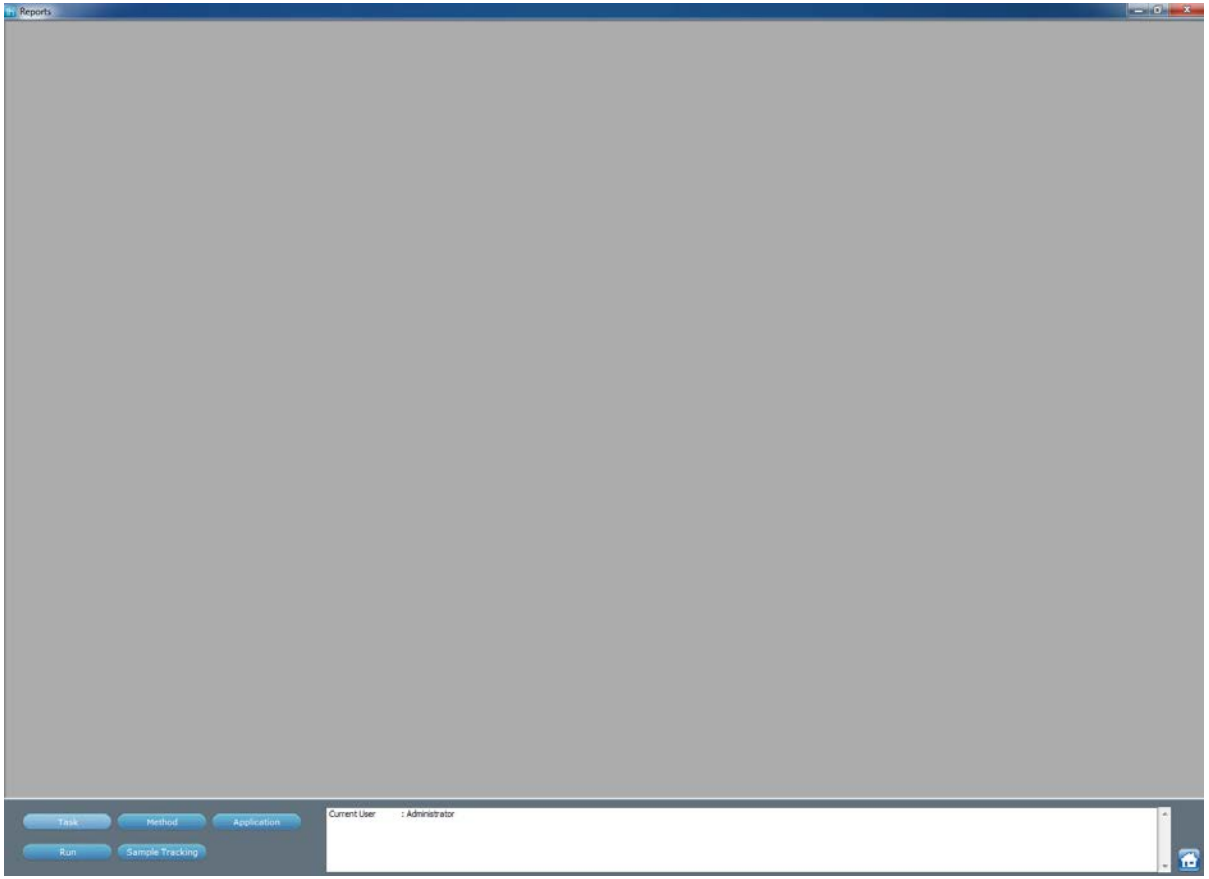
The Reports menu is used to generate reports. View and print reports directly or export them to rich text format (*.rtf), Adobe® PDF (*.pdf), Microsoft® Word (*.doc), or Microsoft® Excel (*.xls) file types for further study and formatting.

The following types of reports can be generated:

- Task Report
- Method Report
- Application Report
- Run Report
- Sample Tracking Report

The Reports Window

To open a Report window, click **Liquid Handling** | **Reports** to display the Reports window.



Reports Overview

The following types of reports can be generated:

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, description, created date, and created by), configuration information, bed layout information (racks used), variables, steps, and error handling.
Application Report	This report comprises two parts: a brief summation of the application information (application name and version, created by, created date, and description) and sample list details (including values for variables).
Run Report	This report comprises three parts: a brief summation of the application run information (application name, application version, run name, run date, run by, and run mode), sample list details (including values for variables) captured at the end of the run and log information.
Sample Tracking Report	This report comprises a brief summation of the application run information (application name and version, run name, run date, run by, and run mode) and the aspirate and dispense actions for each sample.

TASK REPORT

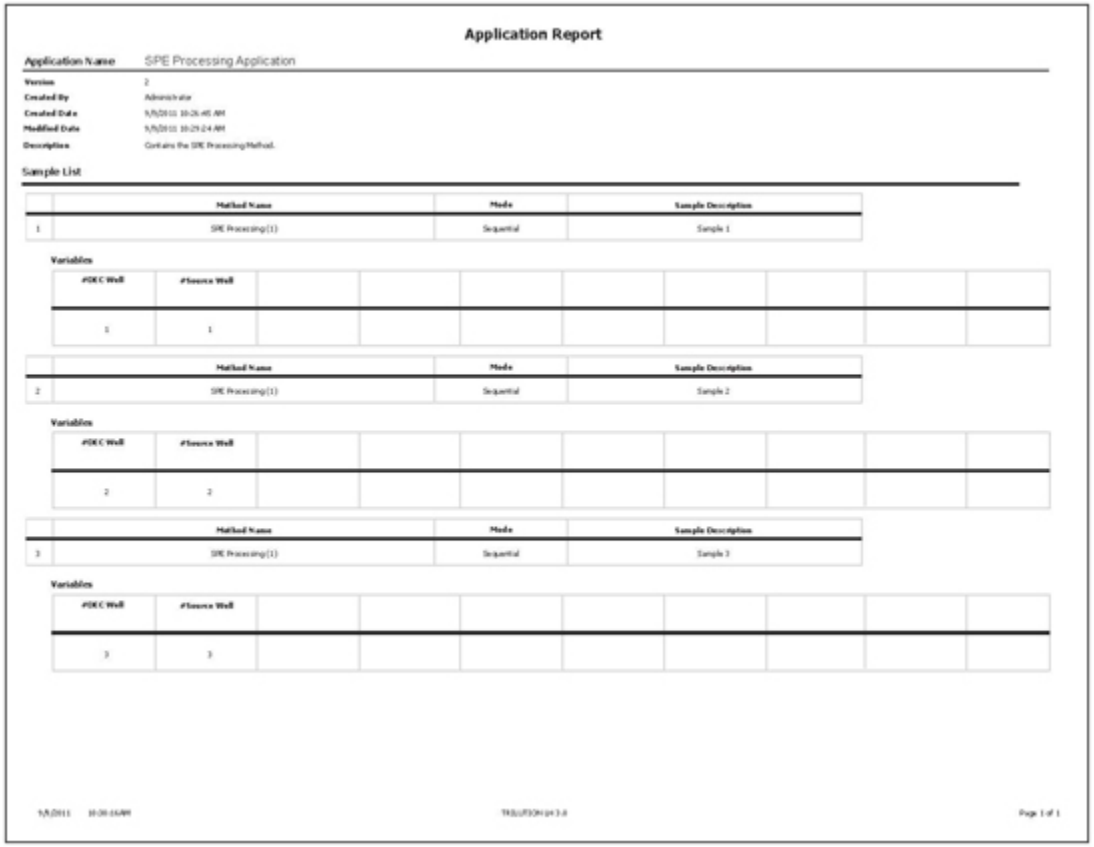
This report comprises three parts: a brief summation of the task information (name, version, description, created date, created by, and last modified date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps).

METHOD REPORT

This report comprises six parts: a brief summation of the method information (name, version, description, created date, created by, and last modified date), configuration information, bed layout information, steps, variables, and error handling.

APPLICATION REPORT

This report comprises two parts: a brief summation of the application information (application name and version, created by, created date, modified date, and description) and sample list details (including values for variables).



Application Report

Application Name SPE Processing Application

Version 2
Created By Administrator
Created Date 9/9/2011 10:26:45 AM
Modified Date 9/9/2011 10:29:24 AM
Description Contains the SPE Processing Method.

Sample List

	Method Name	Mode	Sample Description
1	SPE Processing(1)	Sequential	Sample 1

Variables

#DEC Well	#Source Well								
1	1								

	Method Name	Mode	Sample Description
2	SPE Processing(1)	Sequential	Sample 2

Variables

#DEC Well	#Source Well								
2	2								

	Method Name	Mode	Sample Description
3	SPE Processing(1)	Sequential	Sample 3

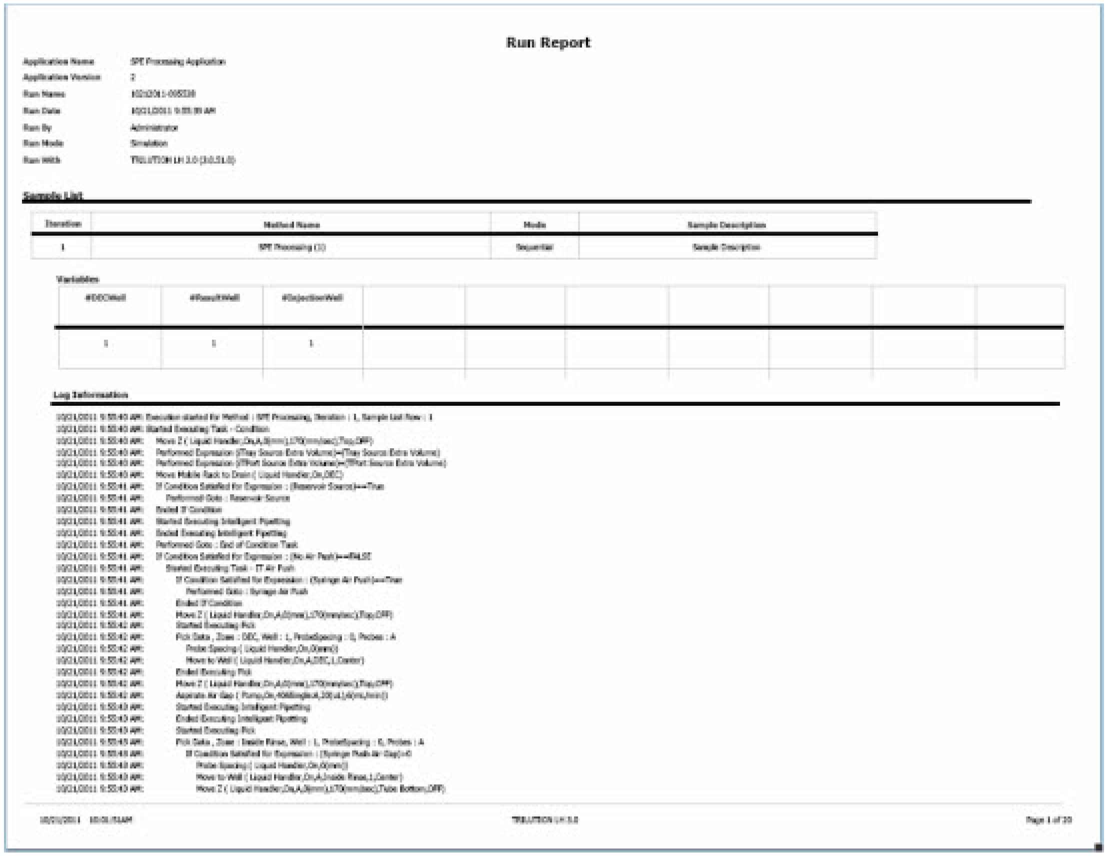
Variables

#DEC Well	#Source Well								
3	3								

9/9/2011 10:26:16 AM TRILUTION Lab 3.0 Page 1 of 1

RUN REPORT

This report comprises three parts: a brief summation of the application run information (application name, application version, run name, run date, run by, run mode, and run with), sample list details (including values for variables) captured at the end of the run, and log information.



Run Report

Application Name SPE Processing Application
Application Version 2
Run Name
Run Date
Run By Administrator
Run Mode Simulation
Run With

Sample List

Iteration	Method Name	Mode	Sample Description
1	SPE Processing (1)	Sequential	Sample Description

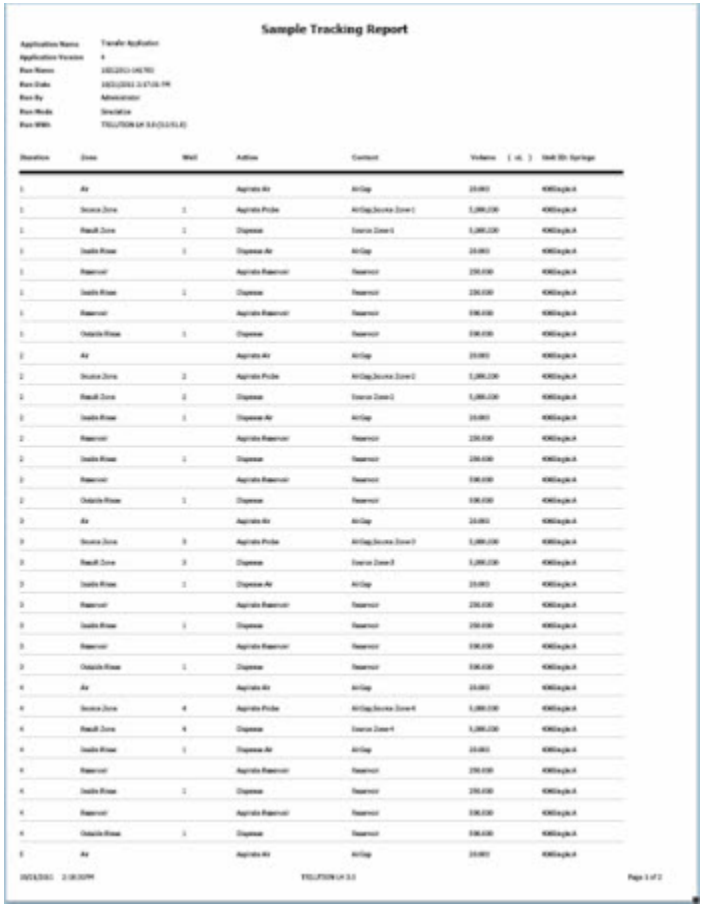
Variables

#DECWell	#ResultWell	#InjectionWell
1	1	1

Log Information

SAMPLE TRACKING REPORT

This report comprises a brief summation of the application run information (application name and version, run name, run date, run by, run mode, and run with) and the aspirate and dispense actions for each iteration.



Sample Tracking Report

View a Report

In the Reports window, select the button that corresponds to the report to be viewed.

Select the parameters for the report from the drop-down menus.

VIEWING TOOLBAR

The toolbar provides quick access to the viewing features of the Reports window.

ICON	DESCRIPTION
	The Export button exports the report to a file type. For more information, see Export a Report.
	The Print button prints the report.
	The Refresh button refreshes the report.
	The Page buttons allow the user to move between the pages of the report
	The Go To Page option allows the user to select a specific page in the report to view.
	The Find Text option allows the user to search for a word in sub-reports.
	The Zoom option allows the user to zoom in on 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.
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.

TASKS - LIQUID HANDLING

Gilson supplies liquid handling tasks for use on all liquid handlers, with the following exceptions:

- GX-271 Analytical Liquid Handler and GX-271 Prep Liquid Handler. Use SS Liquid Handling tasks (see Tasks - SS Liquid Handling).
- GX-281 Analytical Liquid Handler and GX-281 Prep Liquid Handler. Use SS Liquid Handling tasks (see Tasks - SS Liquid Handling).
- Quad-Z 215 with Disposable Tips. Use Disposable Tips tasks (see Tasks - Disposable Tips).

The Inject and SS Inject tasks can only be used on single-probe liquid handlers that use an injection module.

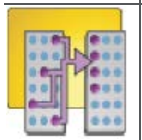
The Z Inject and SS Z Inject tasks can only be used on single-probe liquid handlers that use a Z injection valve.

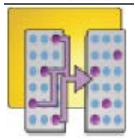
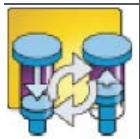
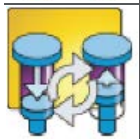
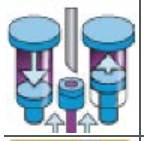
The Prime 402 Dual with Tee task can only be used when the 402 Dual with Tee is the pump.

The Prime Dual with Tee task can be used with the 402 Dual with Tee or VERITY 4120 Dual with Tee Syringe Pump.

The Prime Transfer Ports task can only be used with the GX-274 ASPEC without Pump and the GX-274 Liquid Handler without Pump.

Liquid Handling Tasks

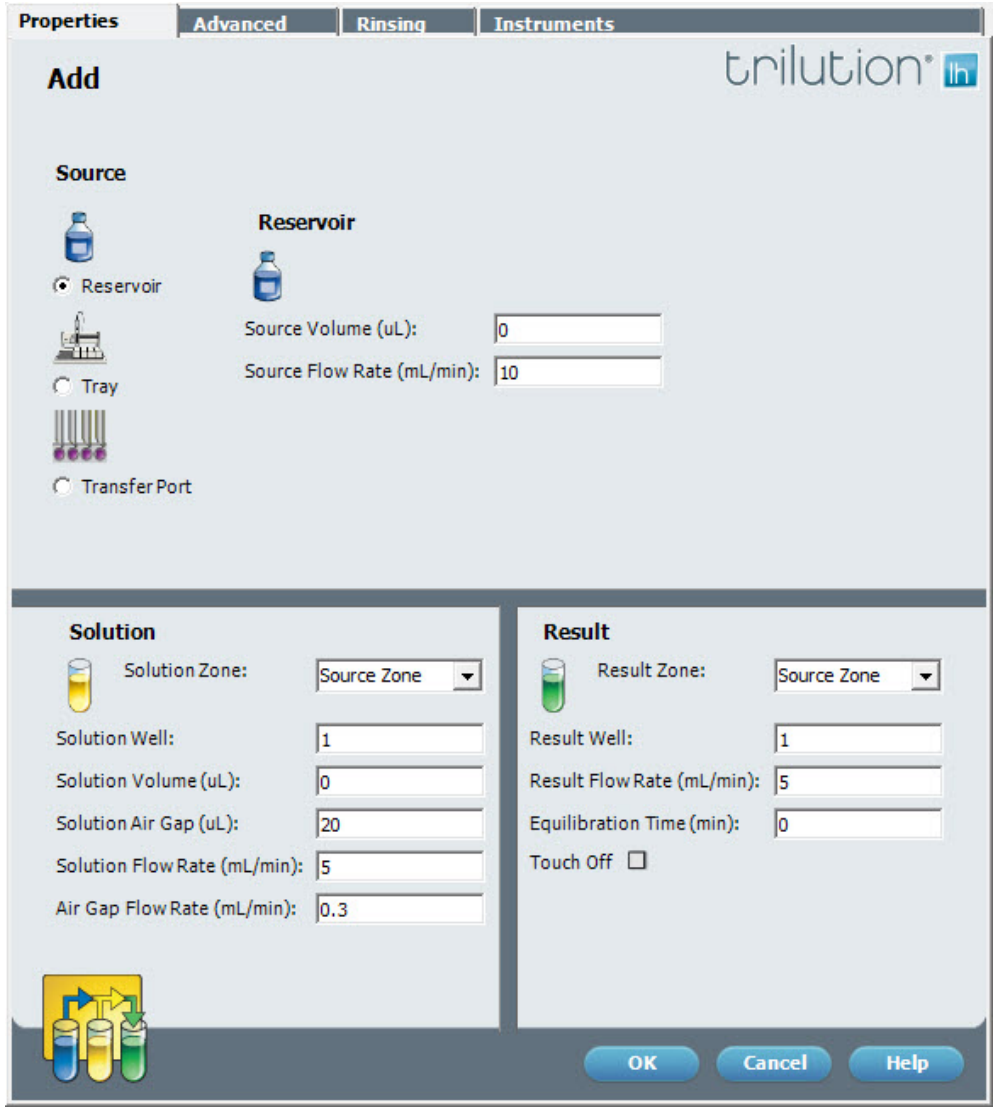
	GILSON TASK NAME AND DESCRIPTION
	Add This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone.
	Aliquot This task aspirates the liquid (source) from the reservoir, tray, or transfer ports and then dispenses that liquid equally to each of the wells of the result zone. This task should be used in Batch mode only.
	Cherry Pick This task transfers liquid (source) from wells in the source zone to wells in the result zone.
	Derivatize This task performs an add—aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone—and then mixes with liquid or air.

	Dilute This task aspirates the specified volume of liquid (source) from the tray and another liquid (diluent) from the reservoir, tray, or transfer ports and then dispenses the combined volume to the wells of the result zone.
	Dispense This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.
	Dispense Random to Random This task transfers liquid (source) from wells in the source zone to random wells in the result zone.
	Inject This task performs a partial loop, total loop, or centered loop injection using an injection module.
	Mix This task aspirates air or liquid and then dispenses it into a well a specified number of times.
	Prime 402 Dual with Tee This task primes the 402 Pump Dual with Tee in the specified zone. It aspirates the full syringe capacity (for each syringe) and dispenses it to the wells in the result zone the specified number of cycles.
	Prime Dual with Tee This task primes a dual with tee syringe pump in the specified zone. It aspirates the full syringe capacity (for each syringe) and dispenses it to the wells in the result zone the specified number of cycles.
	Prime Pump This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.
	Prime Transfer Ports This task primes the transfer ports on a GX-274. It aspirates the specified volume (or the syringe capacity) from the transfer port and then dispenses to the wells of the Inside Rinse Zone.
	Rinse Probes This task rinses the inside and outside of the probe using liquid from the pump reservoir.

	Transfer This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.
	Z Inject This task performs a partial loop, total loop, or centered loop injection using an 845Z Injection Module or GX Z Injection Module.

Add

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone.



For more information about the properties on each tab, see:

[Add - Properties]

[Add - Advanced]

[Add - Rinsing]

[Add - Instruments]

[Add - Sequence of Steps]

Add - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Transfer Port Source Zone	The zone designated for the transfer ports from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	
Solution Well	The well in the Solution Zone from which the Solution Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Solution Volume	The quantity of solution.	0 µL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 µL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1

Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Add - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Solution Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating the Solution. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solution Z Offset. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Solution Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solution Z Offset value to move up from the bottom. 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 Solution Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Solution 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 Solution Z Option when aspirating the Solution Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Add - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **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 (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z-Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **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. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Add - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

ADD - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to Solution Well in Solution Zone.
4 Aspirate Solution Air Gap at Air Gap Flow Rate.
5 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
6 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to Solution Well in Solution Zone.
9 Aspirate Solution Air Gap at Air Gap Flow Rate.
10 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
11 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
12 Wait Equilibration Time.
13 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height.
2 Move probe to well in Source Zone.

3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Set Transfer Port On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Equilibration Time.
8 Set Transfer Port Off.
9 Move Z to Z Safe Height.
10 Move probe to Solution Well in Solution Zone.
11 Aspirate Solution Air Gap at Air Gap Flow Rate.
12 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
13 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Solution Volume + Solution Air Gap + Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 If Source from Tray or Transfer Port:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Source Air Gap Volume at Result Flow Rate.

   If Source from Reservoir and Inside Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

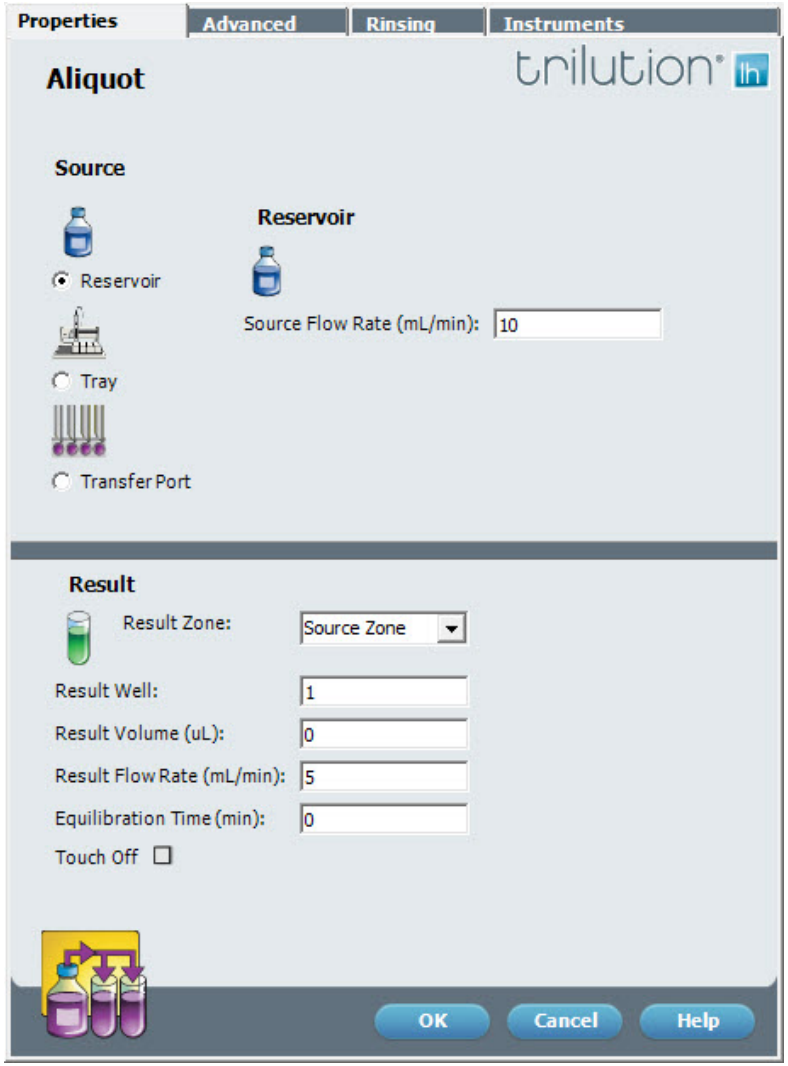
If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 Repeat steps 4–7 until Outside Volume delivered.
9 Move Z to Z Safe Height.

Aliquot

This task aspirates the liquid (source) from the reservoir, tray, or transfer ports and then dispenses that liquid equally to each of the wells of the result zone.

This task should be used in Batch mode only.



For more information about the properties on each tab, see:

Aliquot - Properties

Aliquot - Advanced

Aliquot - Rinsing

Aliquot - Instruments

Aliquot - Sequence of Steps

Aliquot - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Flow Rate	The speed at which the Result Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Tray Source Zone	The zone from which the Result Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Result Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Extra Volume	An additional volume to the Result 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 Result Volume.	0 µL
Tray Source Air Gap	The quantity of the air gap aspirated before the Result Volume.	20 µL
Tray Source Flow Rate	The speed at which the Result Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Result Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A
Transfer Port Extra Volume	An additional volume to the Result 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 Result Volume.	0 µL

Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Result Volume.	20 µL
Transfer Port Source Flow Rate	The speed at which the Result Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Result Volume is delivered.	
Result Well	The well in the Result Zone to which the Result Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Volume	The quantity of liquid delivered to the Result Well in the Result Zone.	0 µL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Aliquot - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	

Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Aliquot - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Aliquot - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

ALIQUOT - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate aliquot volume (Result Volume x number of Result Wells) at Source Flow Rate. If aliquot volume is greater than the syringe capacity, aspirate the maximum syringe volume.

Tray

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate aliquot volume (Result Volume * number of dispenses) + Extra Volume at Source Flow Rate using Liquid Level Following, if selected. If volume is greater than syringe capacity, aspirate syringe capacity.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate aliquot volume (Result Volume * number of dispenses) + Extra Volume at Source Flow Rate. If volume is greater than syringe capacity, aspirate syringe capacity.
7 Wait Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Result Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 Repeat steps 1–5 of Dispense for subsequent Result Wells. If source from Tray or Transfer Port, return to Source Zone to aspirate more source, if necessary. If source from Reservoir, aspirate more source from Reservoir, if necessary.
7 If Source from Tray or Transfer Port:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Source Air Gap at Result Flow Rate.

   If Source from Reservoir and Inside Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

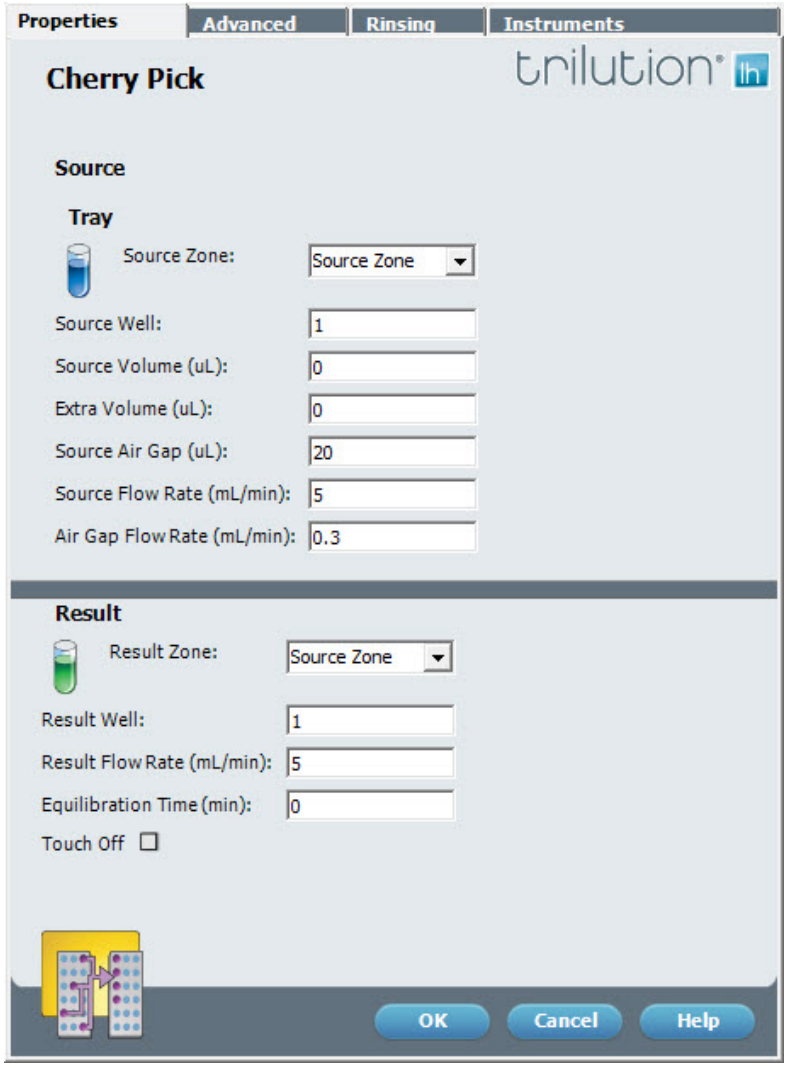
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Cherry Pick

This task transfers liquid (source) from wells in the source zone to wells in the result zone.



For more information about the properties on each tab, see:

Cherry Pick - Properties
Cherry Pick - Advanced
Cherry Pick - Rinsing
Cherry Pick - Instruments

Cherry Pick - Sequence of Steps

Cherry Pick - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	

Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the source volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Cherry Pick - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	

Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Cherry Pick - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

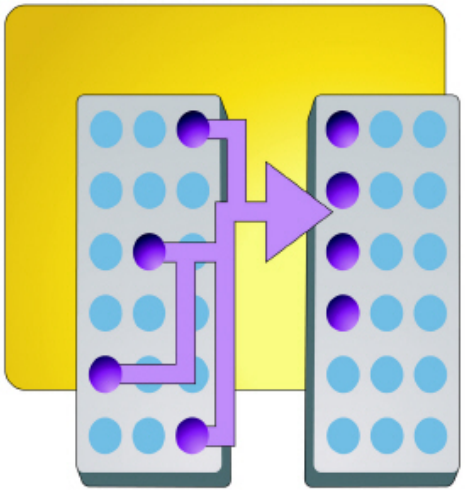
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Cherry Pick - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

CHERRY PICK - 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 Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 If Source Volume is greater than syringe capacity, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume is delivered.
7 Move probe to well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

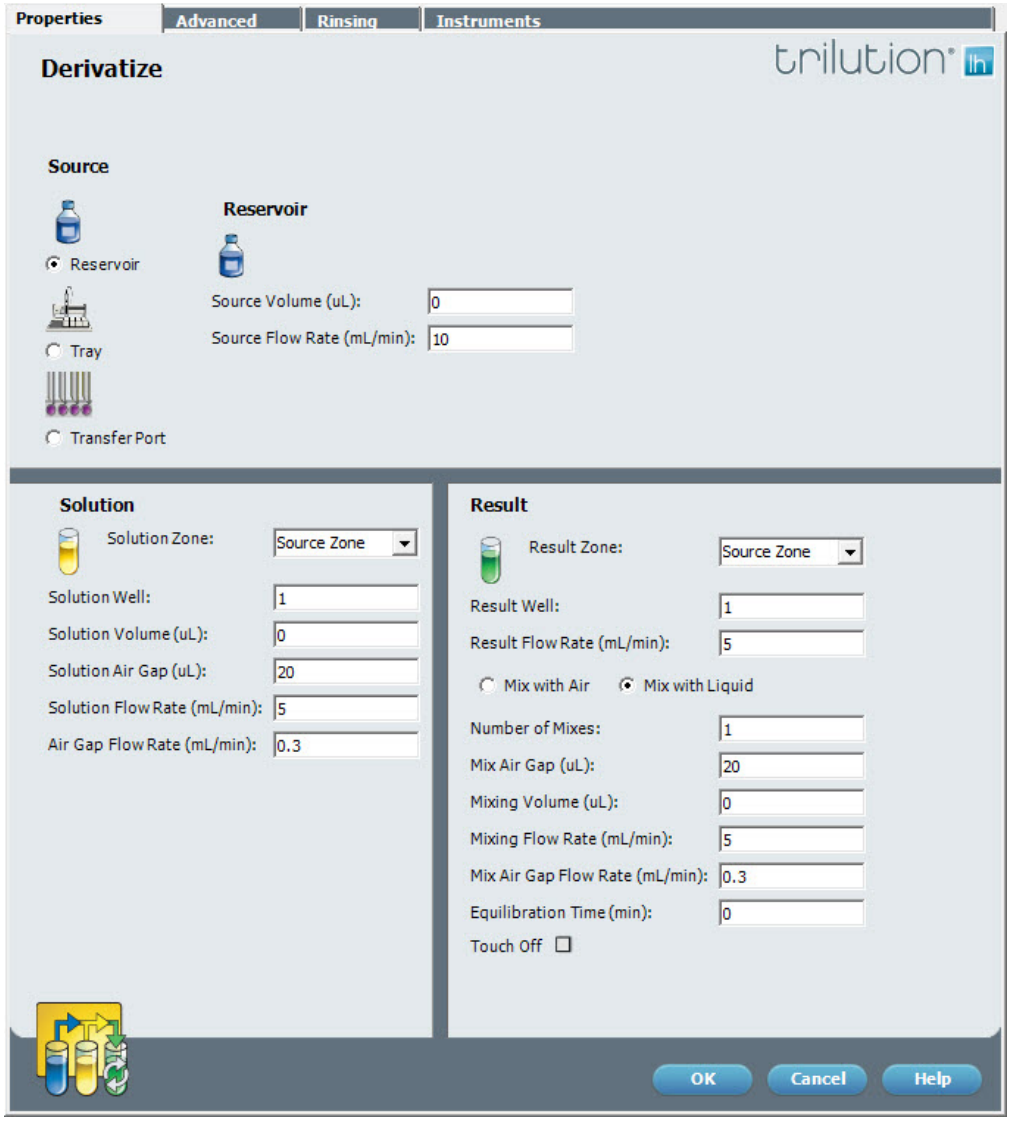
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Derivatize

This task performs an add—aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone—and then mixes with liquid or air.



For more information about the properties on each tab, see:

[Derivatize - Properties]

[Derivatize - Advanced]

[Derivatize - Rinsing]

[Derivatize - Instruments]

[Derivatize - Sequence of Steps]

Derivatize - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Transfer Ports Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	
Solution Well	The well in the Solution Zone from which the Solution Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Solution Volume	The quantity of solution.	0 µL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 µL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Air	Select to mix with air.	

Mix with Liquid	Select to mix with liquid.	
Number of Mixes	Number of times the task should repeat the commands related to mixing.	1
Mix Air Gap	The quantity of the air gap aspirated before the Mixing Volume.	20 µL
Mixing Volume	The quantity of air or liquid used as part of a mixing process.	0 µL
Mixing Flow Rate	The speed at which a volume of air or liquid moves into a probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix Air Gap Flow Rate	The speed at which the Mix Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Derivatize - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Solution Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Solution. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **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 (+) and negative (-) value for the Solution Z Offset. **Top**: Moves probe to the Z-Safe Height; accepts only a negative (-) value for the Solution Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Solution Z Offset values to move up from the bottom. **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 Solution Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Solution 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 Solution Z Option when aspirating the Solution Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Derivatize - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Derivatize - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DERIVATIZE - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Mix with Liquid
4 Mix with Air
5 Inside Rinse
6 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to Solution Well in Solution Zone.
4 Aspirate Solution Air Gap at Air Gap Flow Rate.
5 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
6 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to Solution Well in Solution Zone.
9 Aspirate Solution Air Gap at Air Gap Flow Rate.
10 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
11 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
12 Wait Equilibration Time.
13 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height.
2 Move probe to well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Set Transfer Port On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Equilibration Time.
8 Set Transfer Port Off.
9 Move Z to Z Safe Height.
10 Move probe to Solution Well in Solution Zone.
11 Aspirate Solution Air Gap at Air Gap Flow Rate.
12 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
13 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Solution Volume + Solution Air Gap + Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 If source from Tray or Transfer Port:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Mix with Liquid

1 Aspirate/Dispense:
   a) Move Z to Z Safe Height.
   b) Move probe to Result Well in Result Zone (same as in Dispense).
   c) Aspirate Mix Air Gap at Mix Air Gap Flow Rate.
   d) Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
   e) Aspirate Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected.
   f) Wait Equilibration Time.
   g) Lower probe into well to Result Z Option and Result Z Offset.
      Note: If Liquid Level Following is selected, the Result Z Option will use Auto Calculate.
   h) Dispense Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected.
   i) Wait Equilibration Time.
   j) Repeat steps d–i until Number of Mixes completes.
   k) Perform a Touch Off (X direction), if selected and move Z to Z Safe Height.
2 Drain:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Mix Air Gap at Mixing Flow Rate.

Mix with Air

1 Aspirate/Dispense:
   a) Move Z to Z Safe Height.
   b) Move probe to Result Well in Result Zone (same as in Dispense).
   c) Aspirate Mix Air Gap at Mix Air Gap Flow Rate.
   d) Move Z to Z Safe Height.
   e) Aspirate Mixing Volume at Mixing Flow Rate.
   f) Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
   g) Dispense Mixing Volume at Mixing Flow Rate.
   h) Wait Equilibration Time.
   i) Repeat steps d–h until Number of Mixes completes.
   j) Perform a Touch Off (X direction), if selected and move Z to Z Safe Height.
2 Drain:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Mix Air Gap at Mixing Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

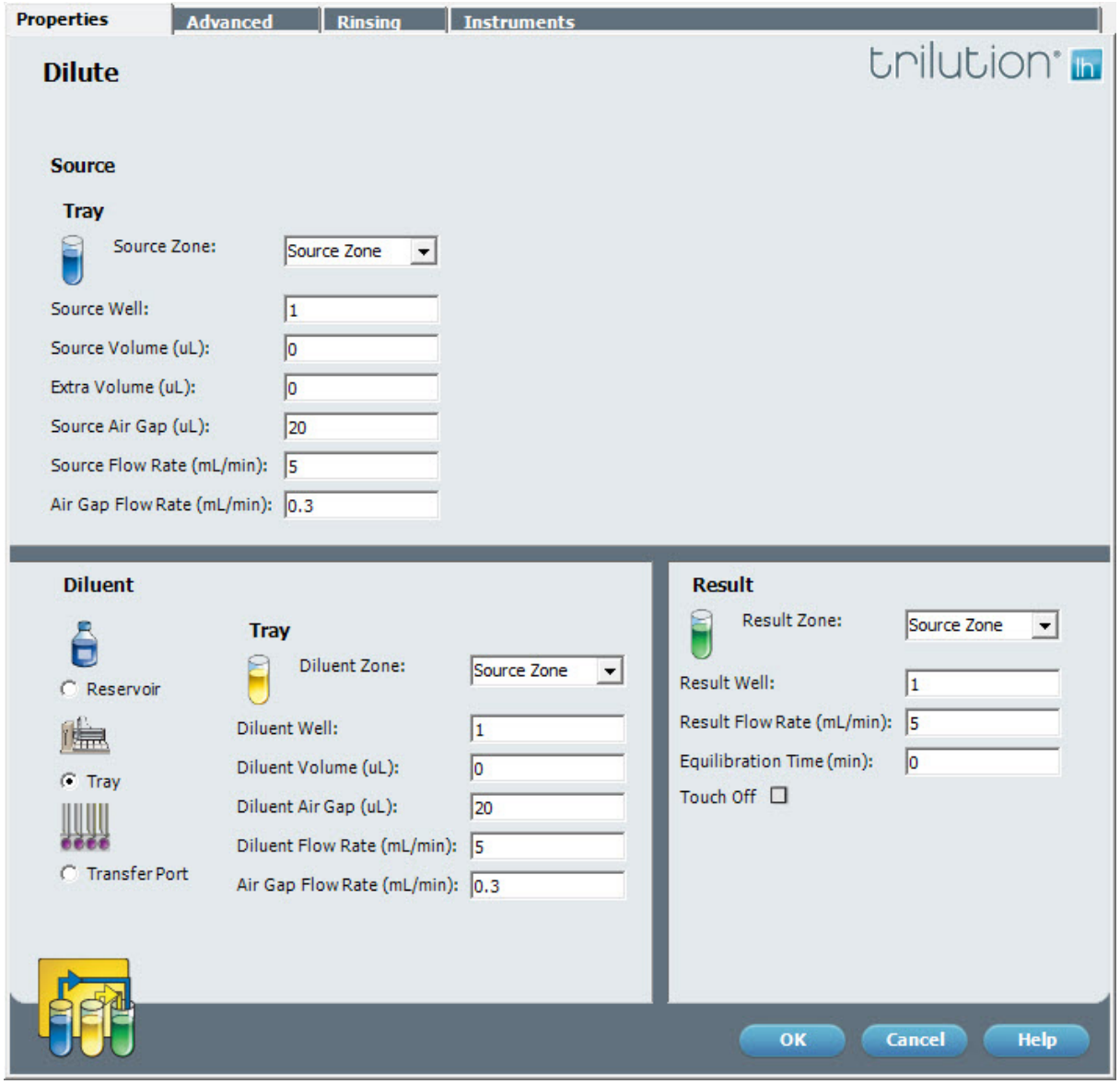
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Dilute

This task aspirates the specified volume of liquid (source) from the tray and another liquid (diluent) from the reservoir, tray, or transfer ports and then dispenses the combined volume to the wells of the result zone.



For more information about the properties on each tab, see:

[Dilute - Properties]

[Dilute - Advanced]

[Dilute - Rinsing]

[Dilute - Instruments]

[Dilute - Sequence of Steps]

Dilute - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Diluent	Select Reservoir, Tray, or Transfer Port.	Tray
Tray Diluent Zone	The zone from which the Diluent Volume is drawn.	
Tray Diluent Well	The well in the Diluent Zone from which the Diluent Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 µL
Tray Diluent Air Gap	The quantity of the air gap aspirated before the Diluent Volume.	20 µL

Tray Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Diluent Air Gap Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Reservoir Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0
Reservoir Diluent Flow Rate	The speed at which the Diluent Volume moves into of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Transfer Port Diluent Zone	The zone from which the Diluent Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A
Transfer Port Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 µL
Transfer Port Diluent Air Gap	The quantity of the air gap aspirated before the Diluent Volume.	20 µL
Transfer Port Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Diluent Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source and Diluent Volumes are delivered.	

Result Well	The well in the Result Zone to which the Source and Diluent Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source and Diluent Volumes move out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Dilute - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset, Diluent Z Offset, and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset, Diluent Z Offset, and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Diluent Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Diluent. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Diluent Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Diluent Z Offset value to move up from the bottom. 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	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 when aspirating the Diluent Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Dilute - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Dilute - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DILUTE - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Diluent Volume (from Reservoir) at Diluent Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Aspirate Source Air Gap at Air Gap Flow Rate.
5 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
6 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to Diluent Well in Diluent Zone.
9 Aspirate Diluent Air Gap at (Diluent) Air Gap Flow Rate.
10 Lower probe into well to Diluent Z Option and Diluent Z Offset using Liquid Level Detection, if selected.
11 Aspirate Diluent Volume at Diluent Flow Rate using Liquid Level Following, if selected.
12 Wait Equilibration Time.
13 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to well in Diluent Zone.
9 Aspirate Diluent Air Gap at (Diluent) Air Gap Flow Rate.
10 Lower probe into well to Diluent Z Option and Diluent Z Offset.
11 Set Transfer Port to On.
12 Aspirate Diluent Volume at Diluent Flow Rate.
13 Wait Equilibration Time.
14 Set Transfer Port to Off.
15 Move Z to Z Safe Height.

Dispense

Reservoir

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense to Source Volume + Source Air Gap + Diluent Volume (from Reservoir) at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 Move probe to well in Inside Rinse Zone.
7 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Tray or Transfer Port

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Source Volume + Diluent Air Gap + Diluent Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 Move probe to well in Inside Rinse Zone.
7 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

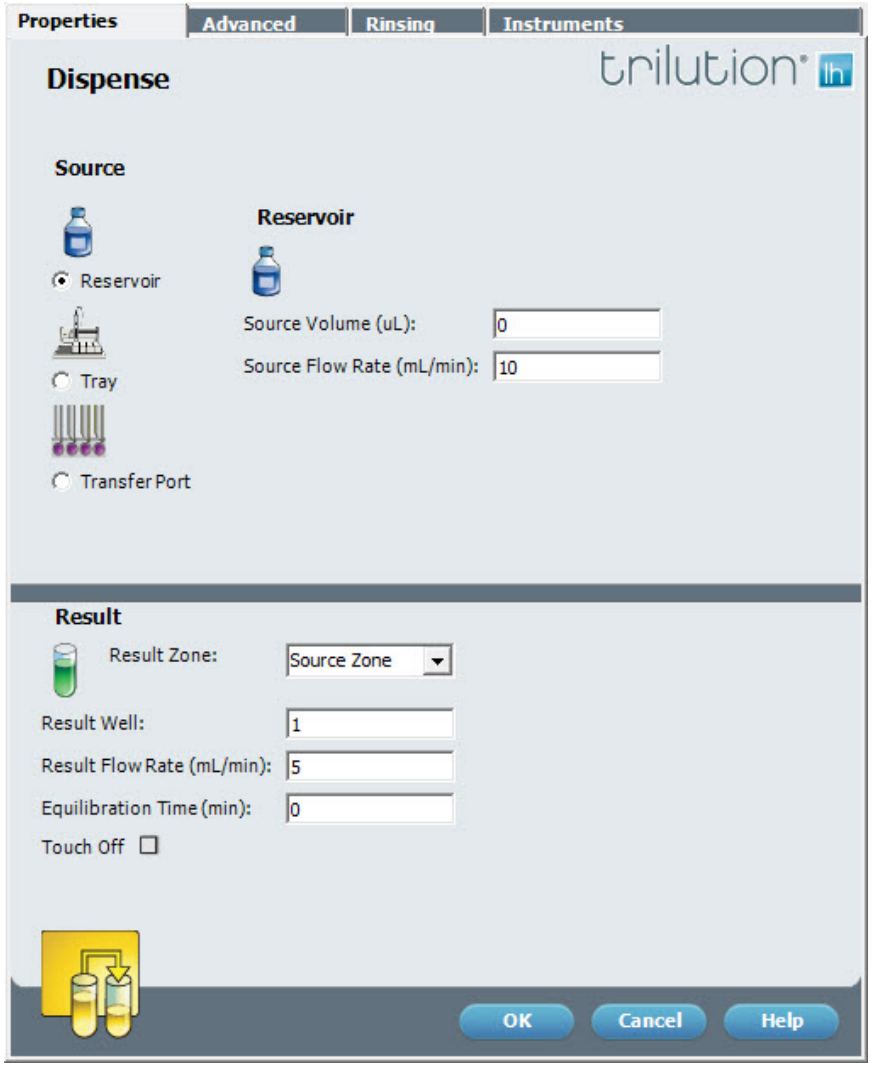
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Dispense

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

[Dispense - Properties]

[Dispense - Advanced]

[Dispense - Rinsing]

[Dispense - Instruments]

[Dispense - Sequence of Steps]

Dispense - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL

Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A
Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Dispense - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Dispense - Rinsing

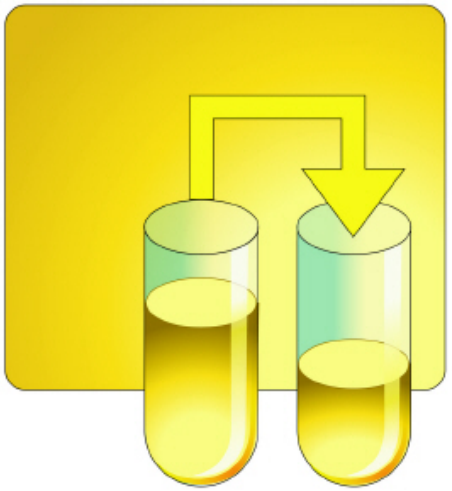
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Dispense - Instruments

PROPERTY NAME	DESCRIPTION	VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DISPENSE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Reservoir

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected. If Source Volume is greater than syringe capacity, repeat steps 3–4 until Source Volume is delivered.
5 Wait Equilibration Time.
6 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
7 If Inside Rinse Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Tray or Transfer Port

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height. If Source Volume is greater than syringe capacity, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered.
6 Move probe to well in Inside Rinse Zone.
7 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

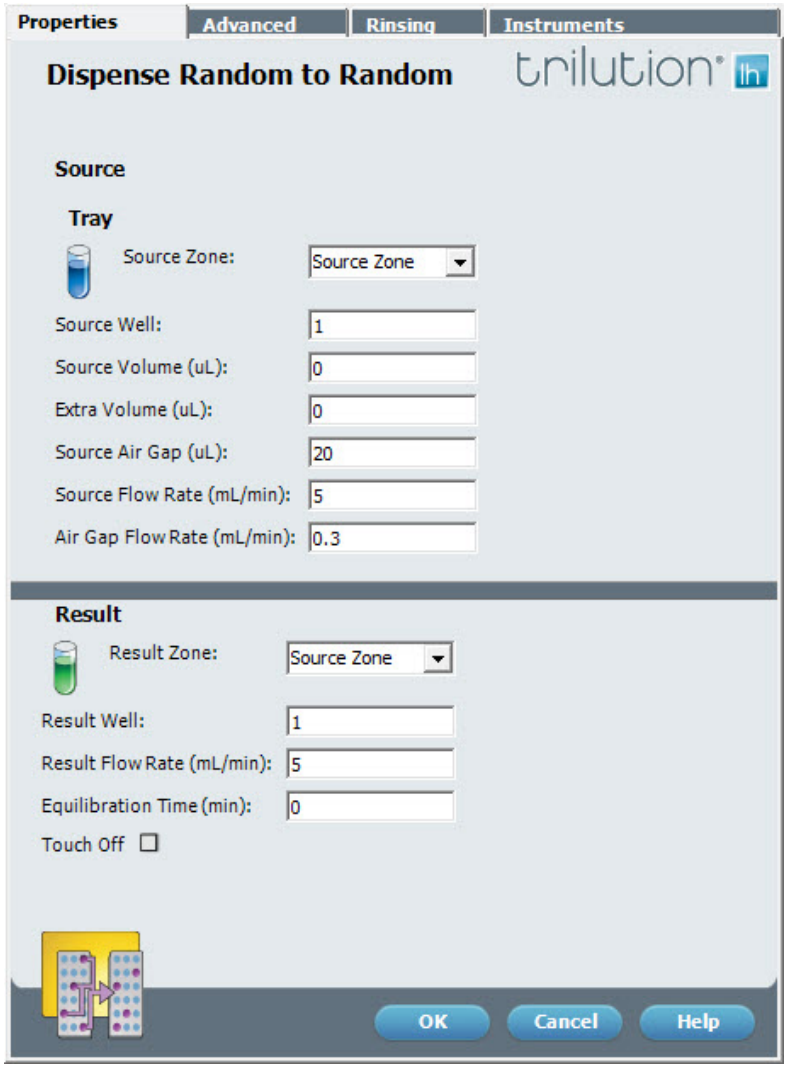
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Dispense Random to Random

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.



For more information about the properties on each tab, see:

Dispense Random to Random - Properties
Dispense Random to Random - Advanced
Dispense Random to Random - Rinsing
Dispense Random to Random - Instruments

Dispense Random to Random - Sequence of Steps

Dispense Random to Random - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tray	The zone from which the Source Volume is drawn.	

Source Zone		
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Dispense Random to Random - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Dispense Random to Random - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

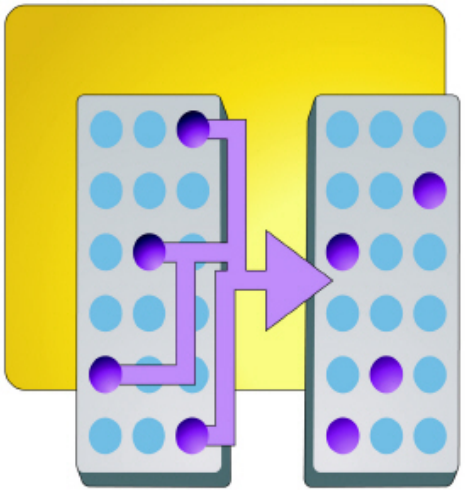
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Dispense Random to Random - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DISPENSE RANDOM TO RANDOM - 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 Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height

Dispense

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height. If Source Volume is greater than syringe capacity, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered.
6 Move probe to well in Inside Rinse Zone.
7 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

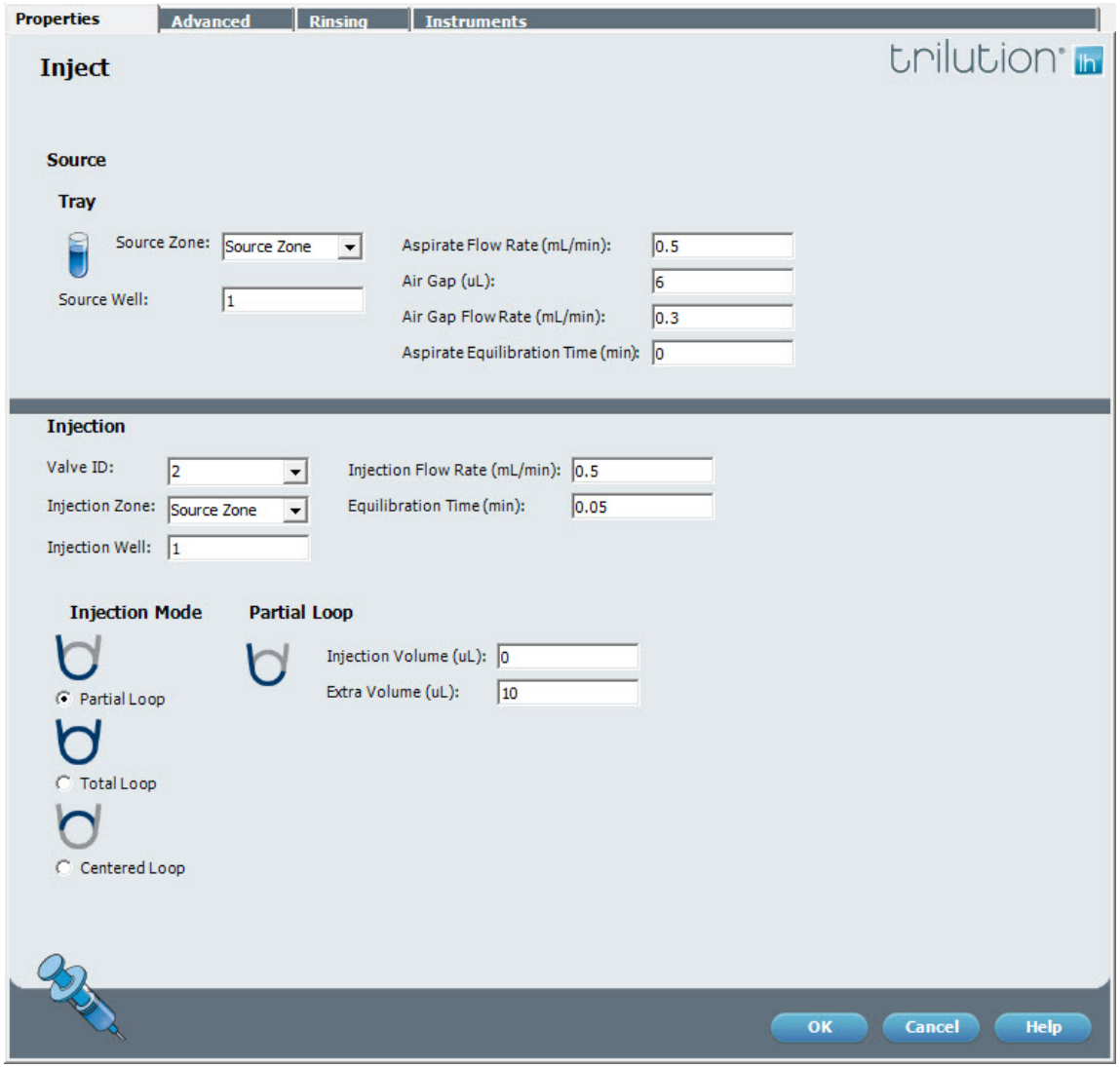
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Inject

This task performs a partial loop, total loop, or centered loop injection using an injection module.



For more information about the properties on each tab, see:

[Inject - Properties]

[Inject - Advanced]

[Inject - Rinsing]

[Inject - Instruments]

[Inject - Sequence of Steps]

Inject - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Injection Volume is drawn.	
Source Well	The well in the Source Zone from which the Injection Volume is drawn.	1
Aspirate Flow Rate	The speed at which the Injection Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	0.5 mL/min
Air Gap	The quantity of the air gap aspirated before the Injection Volume.	6 µL
Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Aspirate Equilibration Time	Time the program waits after aspirating before moving out of the well.	0 min
Valve ID	For the GX-281, enter 2 for the Left GX Direct Injection Module or 3 for the Right GX Direct Injection Module.	2
Injection Zone	The zone to which the Injection Volume is dispensed.	
Injection Well	The well in the Injection Zone to which the Injection Volume is delivered.	1
Injection Flow Rate	The speed at which the Injection Volume moves out of the probe and into the injection port.	0.5 mL/min
Equilibration Time	The time the program waits after dispensing to the injection port before switching the valve to the Inject position.	0.05 min
Injection Mode	Select Partial Loop, Total Loop, or Centered Loop.	Partial
Partial Loop Injection Volume	The quantity of a sample.	0 µL
Partial Loop Extra Volume	An additional volume to the Injection 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
Total Loop Extra Volume	An additional volume to the Injection 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.	0 µL
Total Loop Loop Volume	The capacity of the installed sample loop.	0 µL

Total Loop Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill * Loop Volume	5
Centered Loop Bracket Source with	Select Solvent to bracket the source with a selectable solvent. Select Air to bracket the source with air gaps.	Solvent
Centered Loop Source Volume	The quantity of a sample.	0 µL
Centered Loop (Bracket Source with Solvent) Solvent Zone	The zone from which the Solvent Volumes are drawn.	
Centered Loop (Bracket Source with Solvent) Solvent Well	The well in the Solvent Zone from which the Solvent Volumes are drawn.	1
Centered Loop (Bracket Source with Solvent) Solvent Air Gap	The quantity of the air gap aspirated before and after the Source Volume.	0
Centered Loop (Bracket Source with Solvent) Front Solvent Volume	The quantity of solvent aspirated before the Source Volume.	0 µL
Centered Loop (Bracket Source with Solvent) Back Solvent Volume	The quantity of solvent aspirated after the Source Volume.	0 µL
Centered Loop (Bracket Source with Air) Front Air Gap Volume	The quantity of air gap aspirated before the Source Volume.	0 µL

Centered Loop (Bracket Source with Air) Back Air Gap Volume	The quantity of air gap aspirated after the Source Volume.	0 µL
Centered Loop Push Volume	The volume of reservoir solvent used to push the injection volume into the sample loop.	0 µL

Inject - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the height at which the liquid was detected. **Note**: If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom.	Tube Bottom

	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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	
Source Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Injection Z Option	Defined reference point when dispensing to the Injection Zone. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Injection Z Offset value to move up from the bottom.	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom when dispensing to the Injection Zone.	0 mm
Centered Loop (Bracket Source with Solvent) Solvent Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating the Solvent. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solvent Z Offset. **Top**: Moves probe to the Z-Safe Height; enter a negative (-) value for the Solvent Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solvent Z Offset value to move up from the bottom. **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 Solvent Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Centered Loop (Bracket Source with Solvent) Solvent Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from reference point defined by the Solvent Z Option when aspirating the Front or Back Solvent Volume.	2 mm
Injection Coordination	Select None or Contact Coordination.	Contact Coordination

Contact Coordination Contact	Enter the number that corresponds to the output contact to act on for the instrument selected. This contact is used to coordinate the injection with a data collection program.	1
Contact Coordination Pulse Duration	Length of time the program will wait between each output contact state change.	0.05 min

Inject - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port. For a range of suggested flow rate values, see Flow Rates.	4 mL/min
Injection Rinse Volume	The quantity of liquid used to rinse the injection port.	500 µL
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	2 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Inject - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Injector	The injector or injection module that the task will affect.	

INJECT - SEQUENCE OF STEPS

The following injection modes are available:

- Partial Loop
- Total Loop
- Centered Loop (Bracket Source with Solvent)
- Centered Loop (Bracket Source with Air)

The following is an overview for the sequence of steps.

Partial Loop

Aspirate

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Dispense Extra Volume at Injection Flow Rate.
4 Set injection valve position to Load.
5 Wait 0.02 min.
6 Dispense Injection Volume at Injection Flow Rate.
7 Wait Equilibration Time.
8 Set injection valve position to Inject.
9 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Dispense Air Gap at Injection Flow Rate.

Injection Rinse

1 Aspirate Injection Rinse Volume (from Reservoir) at Injection Rinse Flow Rate.
2 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3 Repeat steps 1–2 until Injection Rinse Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Total Loop

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Air Gap at Air Gap Flow Rate.
4 Move probe to Source Well in Source Zone.
5 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
6 Aspirate (Loop Volume * Loop Volume Overfill) + Extra Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
7 Wait Aspirate Equilibration Time.
8 Move Z to Z Safe Height.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Set injection valve position to Load.
4 Wait 0.02 min.
5 Dispense (Loop Volume * Loop Volume Overfill) at Injection Flow Rate.
6 Wait Equilibration Time.
7 Set injection valve position to Inject.
8 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Dispense Extra Volume at Injection Rinse Flow Rate.
2 Dispense Air Gap at Injection Rinse Flow Rate.

Injection Rinse

1 Aspirate Injection Rinse Volume (from Reservoir) at Injection Rinse Flow Rate.
2 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3 Repeat steps 1–2 until Injection Rinse Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Centered Loop (Bracket Source with Solvent)

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Air Gap at Air Gap Flow Rate.
4 Aspirate Push Volume (from Reservoir) at Aspirate Flow Rate.
5 Move probe to Solvent Well in Solvent Zone.
6 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
7 Aspirate Front Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Solvent Air Gap at Air Gap Flow Rate.
11 Move probe to Source Well in Source Zone.
12 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
13 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
14 Wait Aspirate Equilibration Time.
15 Move Z to Z Safe Height.
16 Aspirate Solvent Air Gap at Air Gap Flow Rate.
17 Move probe to Solvent Well in Solvent Zone.
18 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
19 Aspirate Back Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
20 Wait Aspirate Equilibration Time.
21 Move Z to Z Safe Height.
22 Aspirate Air Gap at Air Gap Flow Rate.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Set injection valve position to Load.
4 Wait 0.02 min.
5 Dispense Front Solvent Volume + Solvent Air Gap + Source Volume + Solvent Air Gap + Back Solvent Volume + Air Gap + Push Volume at Injection Flow Rate.
6 Wait Equilibration Time.
7 Set injection valve position to Inject.
8 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Dispense Air Gap at Injection Rinse Flow Rate.

Injection Rinse

1 Aspirate Injection Rinse Volume (from Reservoir) at Injection Rinse Flow Rate.
2 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3 Repeat steps 1–2 until Injection Rinse Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Centered Loop (Bracket Source with Air)

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Front Air Gap Volume at Air Gap Flow Rate.
4 Aspirate Push Volume (from Reservoir) at Aspirate Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Back Air Gap Volume at Air Gap Flow Rate.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Set injection valve position to Load.
4 Wait 0.02 min.
5 Dispense Source Volume + Back Air Gap Volume + Push volume at Injection Flow Rate.
6 Wait Equilibration Time.
7 Set injection valve position to Inject.
8 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Dispense Front Air Gap Volume at Injection Rinse Flow Rate.

Injection Rinse

1 Aspirate Injection Rinse Volume (from Reservoir) at Injection Rinse Flow Rate.
2 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
3 Repeat steps 1–2 until Injection Rinse Volume delivered.
4 Move Z to Z Safe Height.

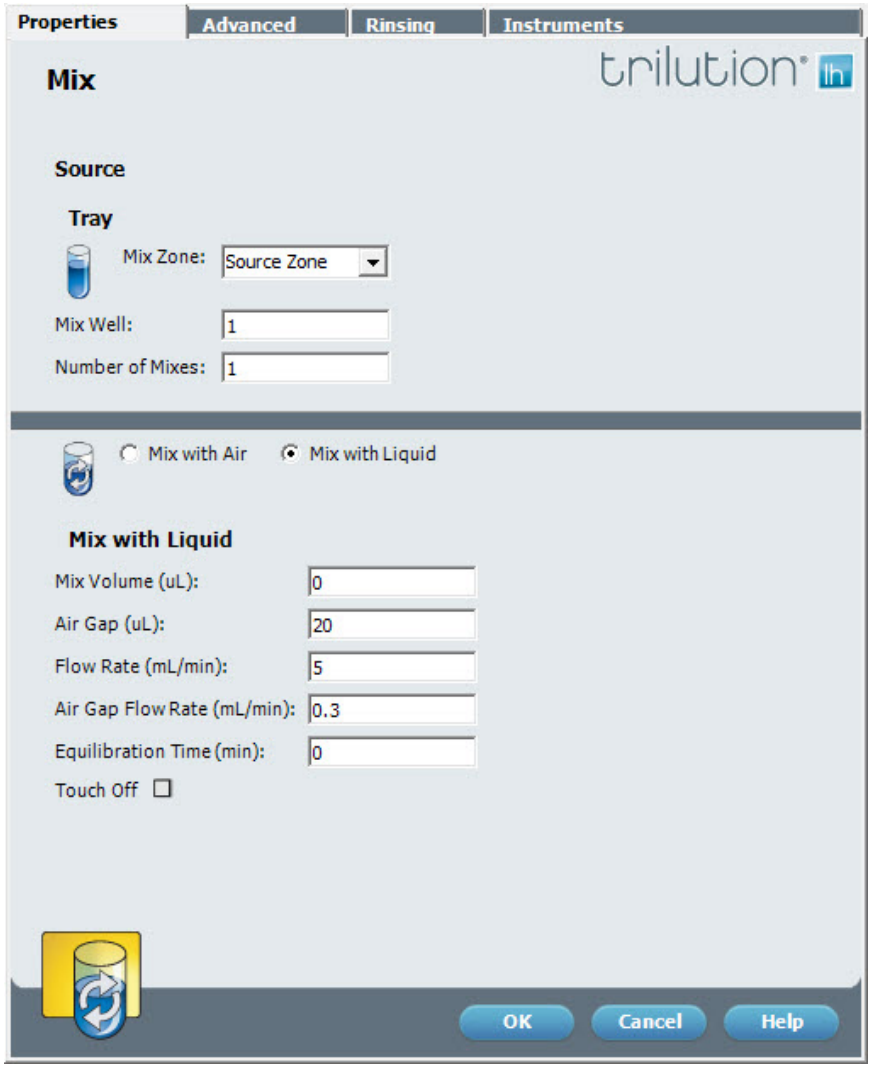
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Mix

This task aspirates air or liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, see:

Mix - Properties

Mix - Advanced

Mix - Rinsing

Mix - Instruments

Mix - Sequence of Steps

Mix - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT
Mix Zone	The zone in which the mix is performed.	
Mix Well	The well in the Mix Zone in which the mix is performed. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Number of Mixes	The number of times the task should repeat the commands related to mixing.	1
Mix with Air/Mix with Liquid	Select Mix with Air or Mix with Liquid.	Mix with Liquid
Mix with Liquid Mix Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Air Gap	The quantity of air gap aspirated before the Mix Volume.	20 µL
Mix with Liquid Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Liquid Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Mix with Liquid Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Mix with Liquid Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	
Mix with Air Mix Volume	The quantity of air used as part of a mixing process.	0 µL
Mix with Air Air Gap	The quantity of air gap aspirated before the Mix Volume.	20 µL
Mix with Air Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Air Air Gap Flow Rate	The speed at which the air gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Air	The time the program waits after each dispense before moving out of the well.	0 min

Equilibration Time		
Mix with Air Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Mix - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Mix Zone. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the 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 Source Z Offset. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Mix Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when delivering to the Mix Zone. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 (unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Mix Zone.	2 mm

Mix - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Mix - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

MIX - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Mix with Liquid
2 Mix with Air
3 Inside Rinse
4 Outside Rinse

Mix with Liquid

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Air Gap Flow Rate.
3 Move probe to Mix Well in Mix Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Mix Volume at Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Lower probe into well to Result Z Option and Result Z Offset.

Note: If Liquid Level Following is selected, the Result Z Option will use Auto Calculate.

8 Dispense Mix Volume at Flow Rate using Liquid Level Following, if selected.
9 Wait Equilibration Time.
10 Repeat steps 4–9 until Number of Mixes is complete.
11 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
12 Move probe to well in Inside Rinse Zone.
13 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
14 Dispense Air Gap at Flow Rate

Mix with Air

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Air Gap Flow Rate.
3 Move probe to Mix Well in Mix Zone.
4 Move Z to Z Safe Height.
5 Aspirate Mix Volume at Flow Rate.
6 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
7 Dispense Mix Volume at Flow Rate.
8 Wait Equilibration Time.
9 Repeat steps 4–8 until Number of Mixes is complete.
10 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
11 Move probe to well in Inside Rinse Zone.
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
13 Dispense Air Gap at Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

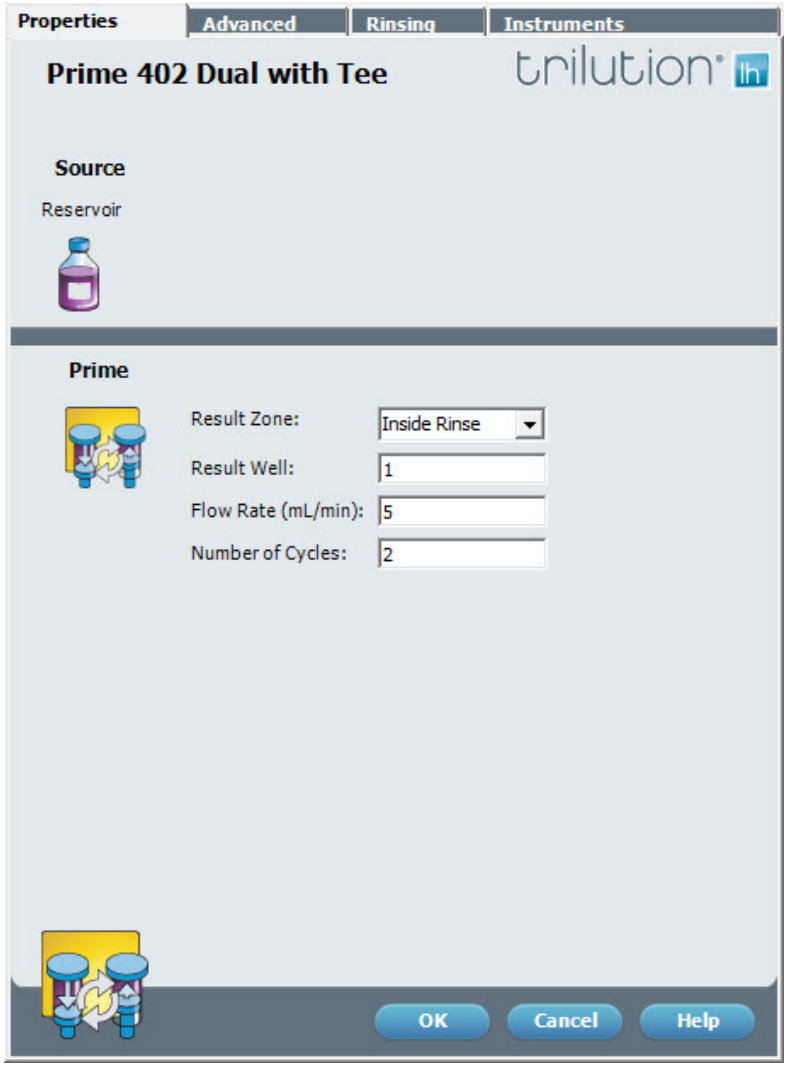
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Prime 402 Dual with Tee

This task primes the 402 Pump Dual with Tee in the specified zone. It aspirates the full syringe capacity (for each syringe) and dispenses it to the wells in the result zone the specified number of cycles.



For more information about the properties on each tab, see:

Prime 402 Dual with Tee - Properties

Prime 402 Dual with Tee - Advanced

Prime 402 Dual with Tee - Rinsing

Prime 402 Dual with Tee - Instruments

Prime 402 Dual with Tee - Sequence of Steps

Prime 402 Dual with Tee - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Source for the Prime 402 Dual Pump with Tee is Reservoir.	Reservoir
Result Zone	The zone to which the Syringe Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Syringe Volume is delivered.	1
Flow Rate	The speed at which the reservoir solvent moves into the syringe and the probe and into the Result Wells. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Number of Cycles	Enter the number of times to repeat aspirating and dispensing	2

Prime 402 Dual with Tee - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Prime 402 Dual with Tee - Rinsing

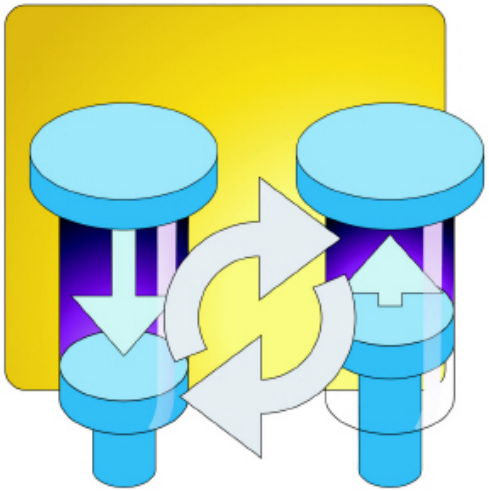
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Prime 402 Dual with Tee - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

PRIME 402 DUAL WITH TEE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate
2 Inside Rinse
3 Outside Rinse

Aspirate

1 Move Z to Z Safe Height.
2 Move probe to Result Well in Result Zone.
3 Lower probe to Result Z Option and Result Z Offset.
4 Aspirate syringe volume (from Reservoir) with the left syringe.
5 Dispense syringe volume with the left syringe.
6 Repeat steps 4–5 for the Number of Cycles.
7 Aspirate the volume needed to prime the right syringe (right syringe volume * Number of Cycles) using the left syringe (from Reservoir).
8 Dispense the right syringe volume using the left syringe, while simultaneously aspirating using the right syringe.
9 Dispense the right syringe volume using the right syringe.
10 Repeat steps 8–9 for the Number of Cycles; repeat step 7, if necessary.

Inside Rinse

If Inside Volume>0:

1 If Result Zone is not Inside Rinse Zone:
   a) Move Z to Z Safe Height.
   b) Move probe to well in Inside Rinse Zone.
c) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset. 2 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate.
4 Repeat steps 2–3 until Inside Volume delivered.
5 Move Z to Z Safe Height.

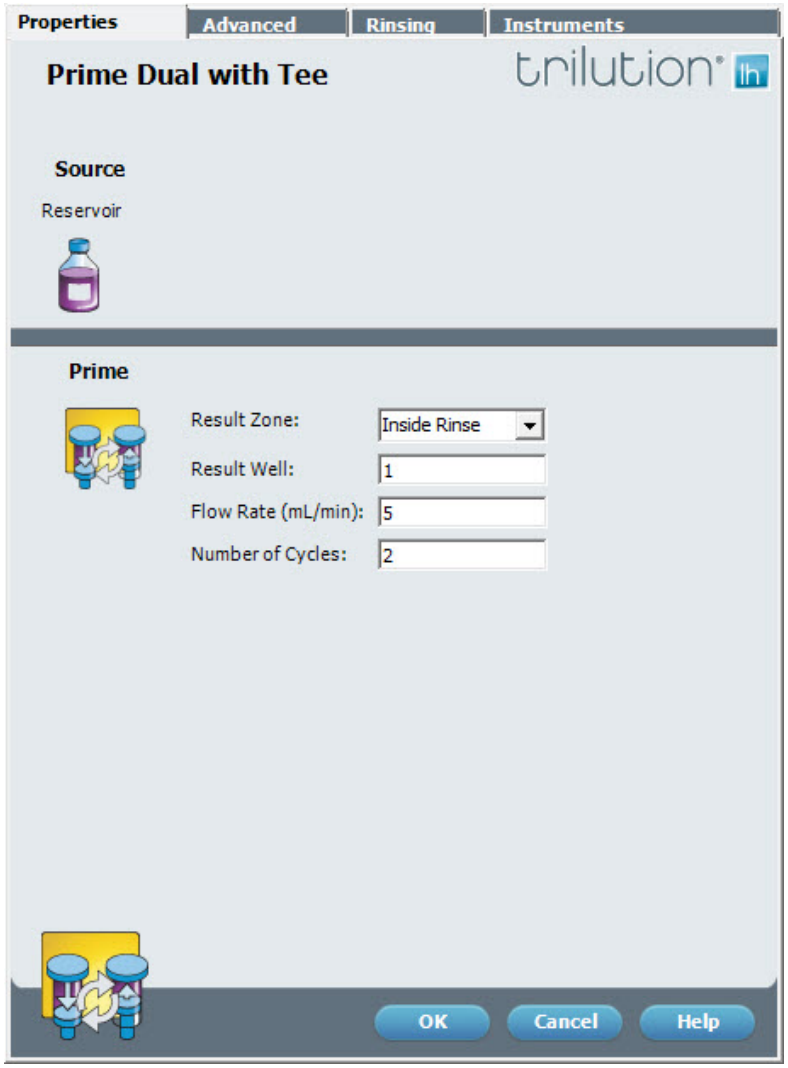
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Prime Dual with Tee

This task primes a dual with tee syringe pump in the specified zone. It aspirates the full syringe capacity (for each syringe) and dispenses it to the wells in the result zone the specified number of cycles.



For more information about the properties on each tab, see:

Prime Dual with Tee - Properties

Prime Dual with Tee - Advanced

Prime Dual with Tee - Rinsing

Prime Dual with Tee - Instruments

Prime Dual with Tee - Sequence of Steps

Prime Dual with Tee - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Source for the Prime Dual Pump with Tee is Reservoir.	Reservoir
Result Zone	The zone to which the Syringe Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Syringe Volume is delivered.	1
Flow Rate	The speed at which the reservoir solvent moves into the syringe and the probe and into the Result Wells. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Number of Cycles	Enter the number of times to repeat aspirating and dispensing	2

Prime Dual with Tee - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Prime Dual with Tee - Rinsing

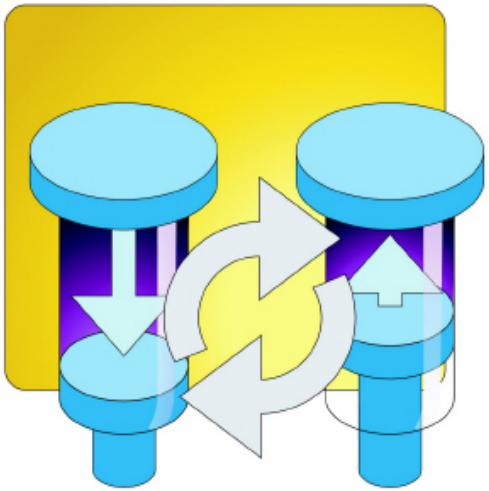
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Prime Dual with Tee - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

PRIME DUAL WITH TEE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate
2 Inside Rinse
3 Outside Rinse

Aspirate

1 Move Z to Z Safe Height.
2 Move probe to Result Well in Result Zone.
3 Lower probe to Result Z Option and Result Z Offset.
4 Aspirate syringe volume (from Reservoir) with the left syringe.
5 Dispense syringe volume with the left syringe.
6 Repeat steps 4–5 for the Number of Cycles.
7 Aspirate the volume needed to prime the right syringe (right syringe volume * Number of Cycles) using the left syringe (from Reservoir).
8 Dispense the right syringe volume using the left syringe, while simultaneously aspirating using the right syringe.
9 Dispense the right syringe volume using the right syringe.
10 Repeat steps 8–9 for the Number of Cycles; repeat step 7, if necessary.

Inside Rinse

If Inside Volume>0:

1 If Result Zone is not Inside Rinse Zone:
   a) Move Z to Z Safe Height.
   b) Move probe to well in Inside Rinse Zone.
c) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset. 2 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate.
4 Repeat steps 2–3 until Inside Volume delivered.
5 Move Z to Z Safe Height.

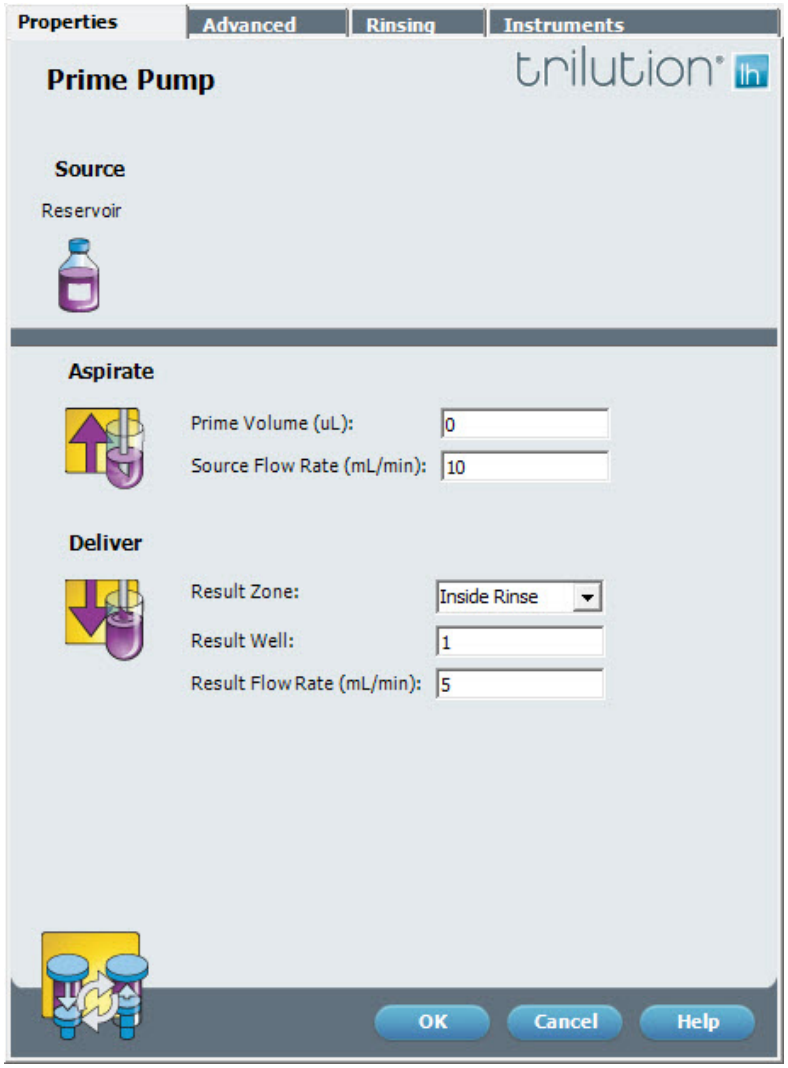
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Prime Pump

This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.



For more information about the properties on each tab, see:

Prime Pump - Properties

Prime Pump - Advanced

Prime Pump - Rinsing

Prime Pump - Instruments

Prime Pump - Sequence of Steps

Prime Pump - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Source for the Prime Pump is reservoir.	Reservoir
Prime Volume	The quantity of the liquid used for priming.	0 µL
Source Flow Rate	The speed at which the Prime Volume moves into the syringe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Result Zone	The zone to which the Prime Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Prime Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Prime Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min

Prime Pump - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Prime Pump - Rinsing

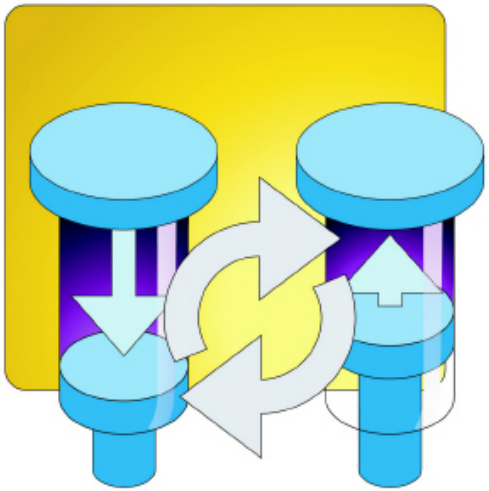
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside 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. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Prime Pump - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

PRIME PUMP - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate
2 Inside Rinse
3 Outside Rinse

Aspirate

1 Move Z to Z Safe Height.
2 Move probe to Result Well in Result Zone.
3 Lower probe into well to Result Z Option and Result Z Offset.
4 Aspirate Prime Volume (from Reservoir) at Source Flow Rate.
5 Dispense Prime Volume at Result Flow Rate.
6 Repeat steps 4–5 until Prime Volume has been delivered.

Inside Rinse

If Inside Volume>0:

1 If Result Zone is not Inside Rinse Zone:
   a) Move Z to Z Safe Height.
   b) Move probe to well in Inside Rinse Zone.

c) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset. 2 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate.
4 Repeat steps 2–3 until Inside Volume delivered.
5 Move Z to Z Safe Height.

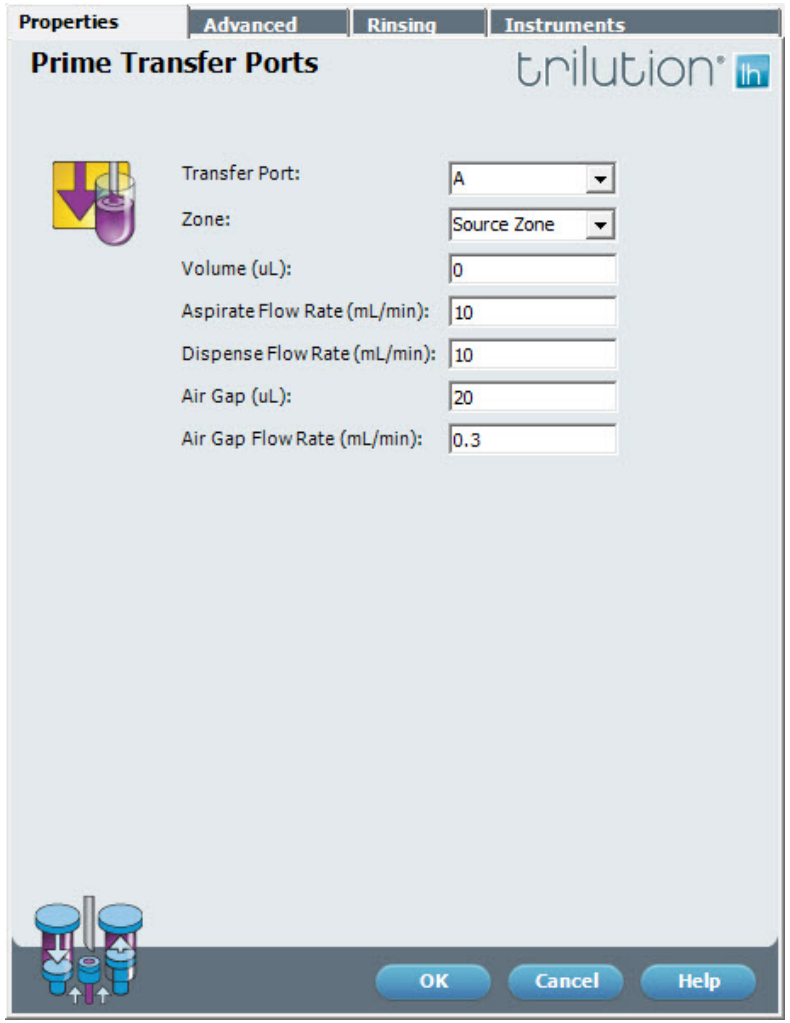
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Prime Transfer Ports

This task primes the transfer ports a GX-274. It aspirates the specified volume (or the syringe capacity) from the transfer port and then dispenses to the wells of the Inside Rinse Zone.



For more information about the properties on each tab, see:

Prime Transfer Ports - Properties

Prime Transfer Ports - Advanced

Prime Transfer Ports - Rinsing

Prime Transfer Ports - Instruments

Prime Transfer Ports - Sequence of Steps

Prime Transfer Ports - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT
Transfer Port	The transfer port on the GX-274 to prime. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A
Zone	The zone from which the Volume is drawn.	
Volume	The quantity of liquid aspirated for the prime.	0 µL
Aspirate Flow Rate	The speed at which the Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Dispense Flow Rate	The speed at which the Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Air Gap	The quantity of the air gap aspirated before the Volume.	20 µL
Air Gap Flow Rate	The speed at which the Air Gap moves into the probe.	0.3 mL/min

Prime Transfer Ports - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Z Option	Reference point used when aspirating from the transfer port. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom.	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 when aspirating from the transfer port.	0 mm

Prime Transfer Ports - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

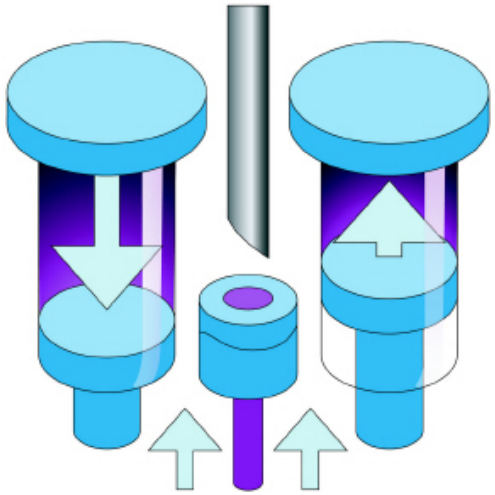
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside 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. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Prime Transfer Ports - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

PRIME TRANSFER PORTS - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate/Dispense
2 Inside Rinse
3 Outside Rinse

Aspirate/Dispense

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Air Gap Flow Rate.
3 Move Z to Z Safe Height.
4 Move probe to well in Zone.
5 Lower probe to Result Z Option (Tube Bottom) and Result Z Offset.
6 Set Transfer Port to On.
7 Aspirate Volume at Aspirate Flow Rate.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.
10 Move probe to well in Inside Rinse Zone.
11 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
12 Dispense Volume at Dispense Flow Rate. If Volume is greater than syringe capacity, repeat steps 3–12 until volume is delivered.
13 Dispense Air Gap at Dispense Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

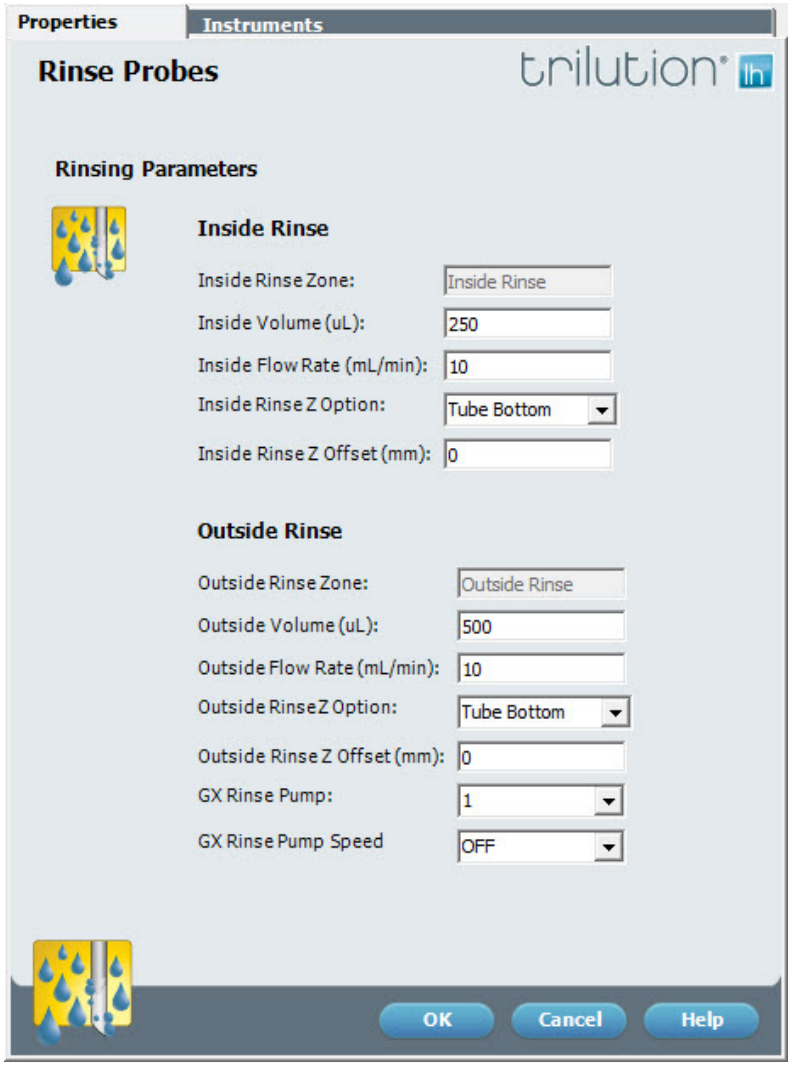
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Rinse Probes

This task rinses the inside and outside of the probe using liquid from the pump reservoir.



For more information about the properties on each tab, see:

Rinse Probes - Properties

Rinse Probes - Instruments

Rinse Probes - Sequence of Steps

Rinse Probes - Properties

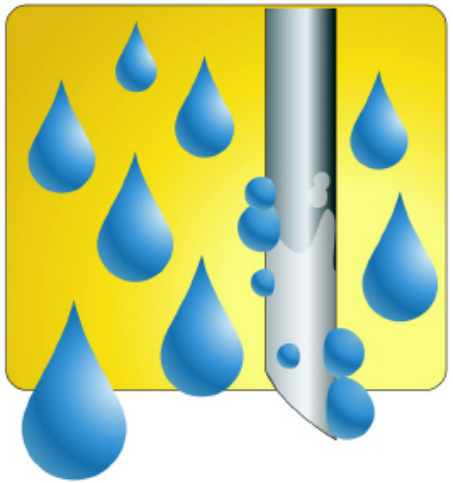
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Rinse Probes - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

RINSE PROBES - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Inside Rinse
2 Outside Rinse

Inside Rinse

If Inside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

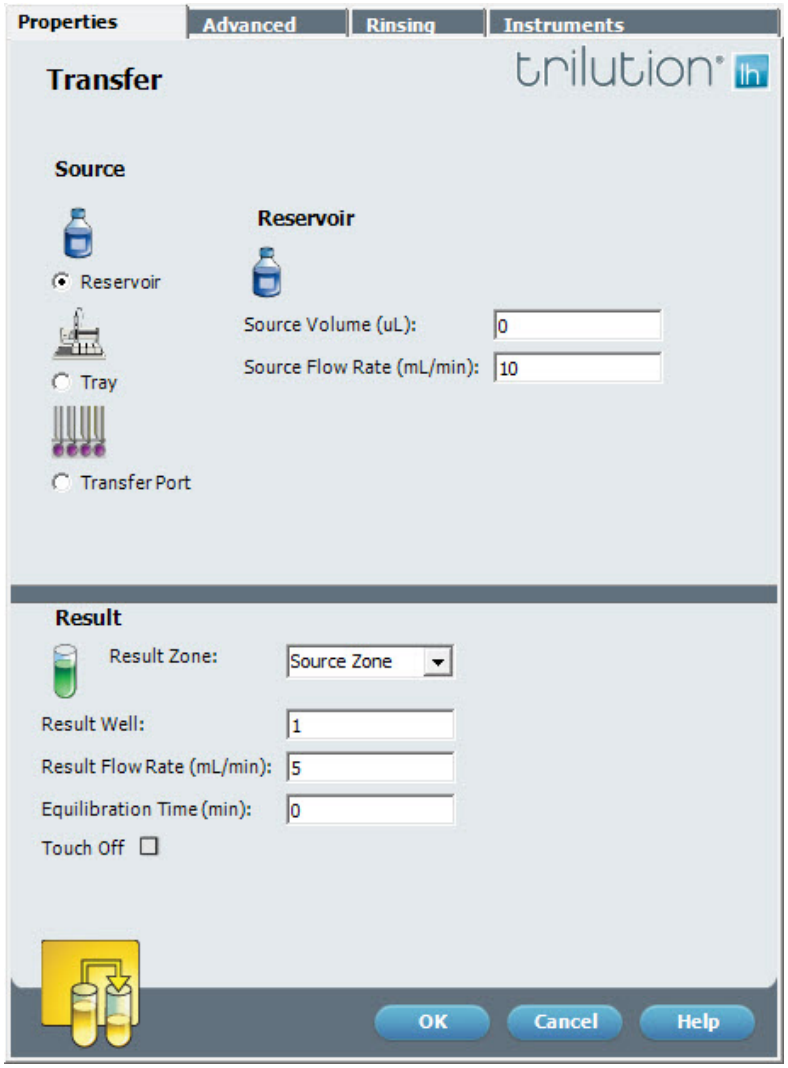
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 Repeat steps 4–7 until Outside Volume delivered.
9 Move Z to Z Safe Height.

Transfer

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Transfer - Properties

Transfer - Advanced

Transfer - Rinsing

Transfer - Instruments

Transfer - Sequence of Steps

Transfer - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	

Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A
Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

Transfer - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	

Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Transfer - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

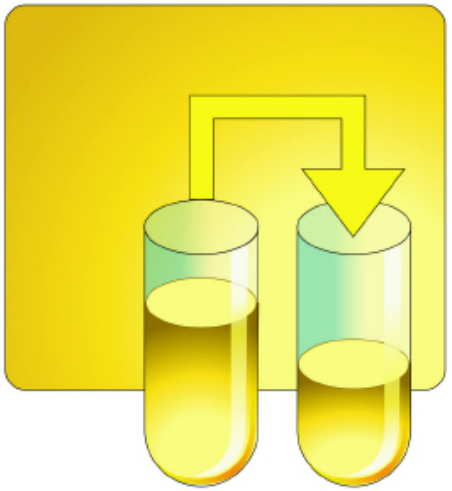
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Transfer - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

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

Reservoir

1 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Equilibration Time.
8 Set Transfer Port to Off
9 Move Z to Z Safe Height

Dispense

Reservoir

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected. If Source Volume is greater than syringe capacity, repeat steps 3–4 until Source Volume is delivered.
5 Wait Equilibration Time.
6 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
7 If Inside Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Tray or Transfer Port

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height. If Source Volume is greater than syringe capacity, repeat aspirate and dispense (Air Gap + Extra Volume are not aspirated) until Source Volume is delivered.
6 Move probe to well in Inside Rinse Zone.
7 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

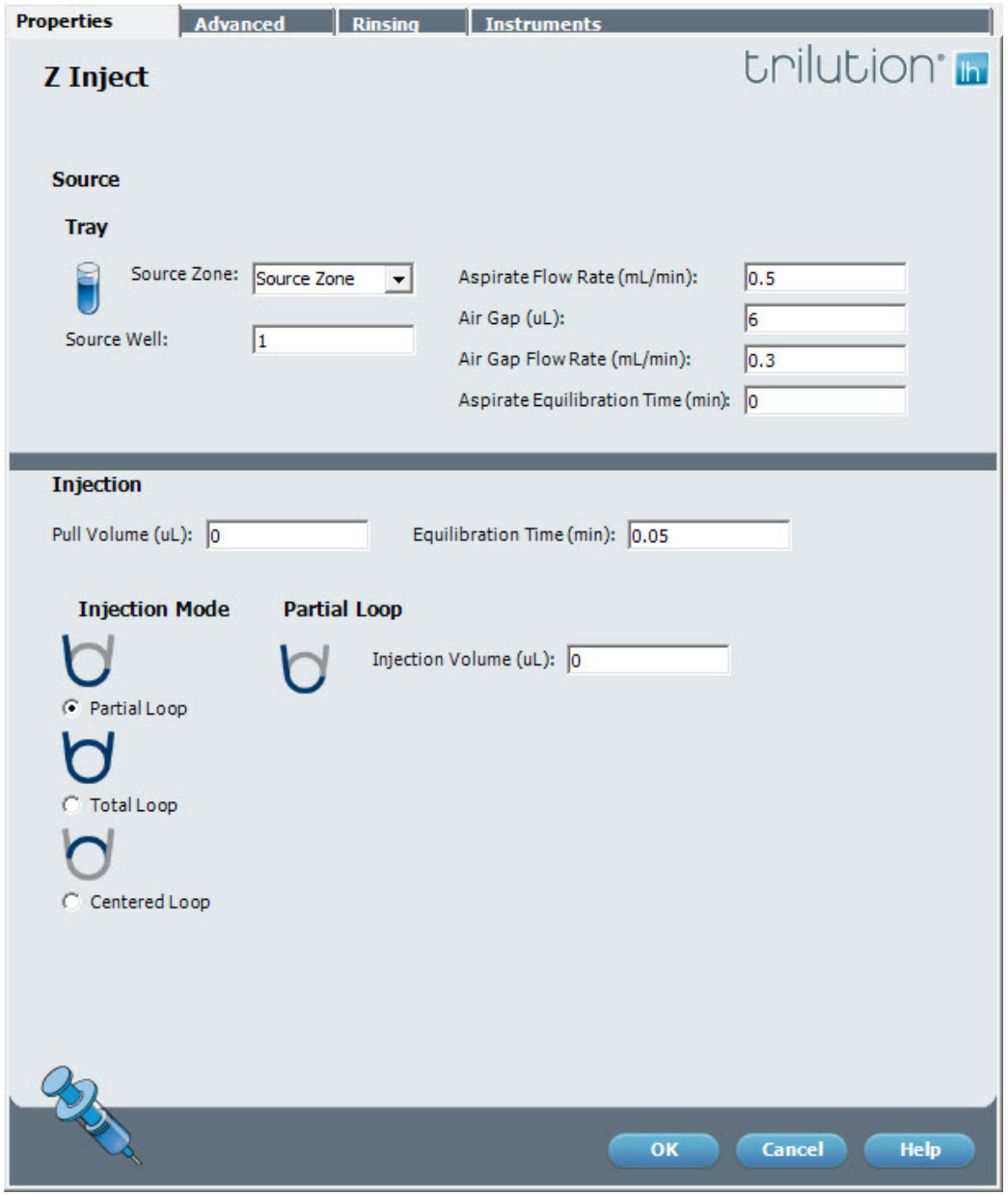
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Z Inject

This task performs a partial loop, total loop, or centered loop injection using an 845Z Injection Module or GX Z Injection Module.



For more information about the properties on each tab, see:

Z Inject - Properties

Z Inject - Advanced

Z Inject - Rinsing

Z Inject - Instruments

Z Inject - Sequence of Steps

Z Inject - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Injection Volume is drawn.	
Source Well	The well in the Source Zone from which the Injection Volume is drawn.	1
Aspirate Flow Rate	The speed at which the Injection Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.5 mL/min
Air Gap	The quantity of the air gap aspirated before the Injection Volume.	6 µL
Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Aspirate Equilibration Time	Time the program waits after aspirating before moving out of the well.	0 min
Pull Volume	A volume of air used to pull the Injection Volume into the sample loop.	0 µL
Equilibration Time	The time the program waits after dispensing to the injection port and before switching the valve to the Inject position.	0.05 min
Injection Mode	Select Partial Loop, Total Loop, or Centered Loop.	Partial Loop
Partial Loop Injection Volume	The quantity of a sample.	0 µL
Total Loop Loop Volume	The capacity of the installed sample loop.	0 µL
Total Loop Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill * Loop Volume.	5
Centered Loop Bracket Source with	Select Solvent to bracket the source with a selectable solvent. Select Air to bracket the source with air gaps.	Solvent
Centered Loop Source Volume	The quantity of a sample	0 µL

Centered Loop (Bracket Source with Solvent) Solvent Zone	The zone from which the Solvent Volumes are drawn.	
Centered Loop (Bracket Source with Solvent) Solvent Well	The well in the Solvent Zone from which the Solvent Volume is drawn.	1
Centered Loop (Bracket Source with Solvent) Solvent Air Gap	The quantity of the air gap aspirated before the Solvent Volume.	0
Centered Loop (Bracket Source with Solvent) Front Solvent Volume	The quantity of solvent aspirated after the Source Volume.	0 µL
Centered Loop (Bracket Source with Solvent) Back Solvent Volume	The quantity of solvent aspirated before the Source Volume.	0 µL
Centered Loop (Bracket Source with Air) Front Air Gap Volume	The quantity of air gap aspirated after the Source Volume.	0 µL
Centered Loop (Bracket Source with Air) Back Air Gap Volume	The quantity of air gap aspirated before the Source Volume.	0 µL

Z Inject - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the height at which the liquid was detected. **Note**: If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	

Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from reference point defined by the Source Z Option when aspirating the Source Volume.	2 mm

Centered Loop (Bracket Source with Solvent) Solvent Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating the Solvent. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solvent Z Offset. **Top**: Moves probe to the Z-Safe Height; enter a negative (-) value for the Solvent Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solvent Z Offset value to move up from the bottom. **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 Solvent Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Centered Loop (Bracket Source with Solvent) Solvent Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from reference point defined by the Solvent Z Option when aspirating the Front or Back Solvent Volume.	2 mm
Injection Coordination	Select None or Contact Coordination.	Contact Coordination
Contact Coordination Contact	Enter the number that corresponds to the output contact to act on for the instrument selected. This contact is used to coordinate the injection with a data collection program.	1
Contact Coordination Pulse Duration	Length of time the program will wait between each output contact state change.	0.05 min

Z Inject - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL

Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	2 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Z Inject - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Injector	The injector or injection module that the task will affect.	

Z INJECT - SEQUENCE OF STEPS

The following injection modes are available:

- Partial Loop
- Total Loop
- Centered Loop (Bracket Source with Solvent)
- Centered Loop (Bracket Source with Air)

The following is an overview for the sequence of steps.

Partial Loop

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set Z inject valve position to Load.
3 Wait 0.02 min.
4 Aspirate Air Gap at Air Gap Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate Injection Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Pull Volume at Aspirate Flow Rate.
11 Wait Equilibration Time.
12 Set Z inject valve position to Inject.
13 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Dispense Air Gap at Inside Flow Rate.
4 Dispense Injection Volume at Inside Flow Rate.
5 Dispense Pull Volume at Inside Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Total Loop

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set Z inject valve position to Load
3 Wait 0.02 min.
4 Aspirate Air Gap at Air Gap Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate (Loop Volume * Loop Volume Overfill) at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Pull Volume at Aspirate Flow Rate.
11 Wait Equilibration Time.
12 Set Z inject valve position to Inject.
13 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Dispense Air Gap at Inside Flow Rate.
4 Dispense (Loop Volume * Loop Volume Overfill) at Inside Flow Rate.
5 Dispense Pull Volume at Inside Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Centered Loop (Bracket Source with Solvent)

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set Z inject valve position to Load.
3 Wait 0.02 min.
4 Aspirate Air Gap at Air Gap Flow Rate.
5 Move probe to Solvent Well in Solvent Zone.
6 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
7 Aspirate Back Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Solvent Air Gap at Air Gap Flow Rate.
11 Move probe to Source Well in Source Zone.
12 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
13 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
14 Wait Aspirate Equilibration Time.
15 Move Z to Z Safe Height.
16 Aspirate Solvent Air Gap at Air Gap Flow Rate.
17 Move probe to Solvent Well in Solvent Zone.
18 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
19 Aspirate Front Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
20 Wait Aspirate Equilibration Time.
21 Move Z to Z Safe Height.
22 Aspirate Air Gap at Air Gap Flow Rate.
23 Aspirate Pull Volume at Aspirate Flow Rate.
24 Wait Equilibration Time.
25 Set Z inject valve position to Inject.
26 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Dispense Air Gap + Air Gap + Solvent Air Gap + Solvent Air Gap at Inside Flow Rate.
4 Dispense Front Solvent Volume + Back Solvent Volume at Inside Flow Rate.
5 Dispense Source Volume at Inside Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Centered Loop (Bracket Source with Air)

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set Z inject valve position to Load.
3 Wait 0.02 min.
4 Aspirate Back Air Gap Volume at Air Gap Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Front Air Gap Volume at Air Gap Flow Rate.
11 Aspirate Pull Volume at Aspirate Flow Rate.
12 Wait Equilibration Time.
13 Set Z inject valve position to Inject.
14 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Dispense Front Air Gap Volume + Back Air Gap Volume at Inside Flow Rate.
4 Dispense Source Volume at Inside Flow Rate.
5 Dispense Pull Volume at Inside Flow Rate.

Inside Rinse

If Inside Volume>0:

1 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate.
3 Repeat steps 1–2 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

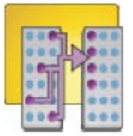
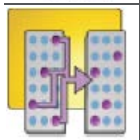
If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

TASKS - SS LIQUID HANDLING

Gilson supplies SS Liquid Handling tasks for use on the following instruments: GX-271 Analytical Liquid Handler, GX-271 Prep Liquid Handler, GX-281 Analytical Liquid Handler, and GX-281 Prep Liquid Handler.

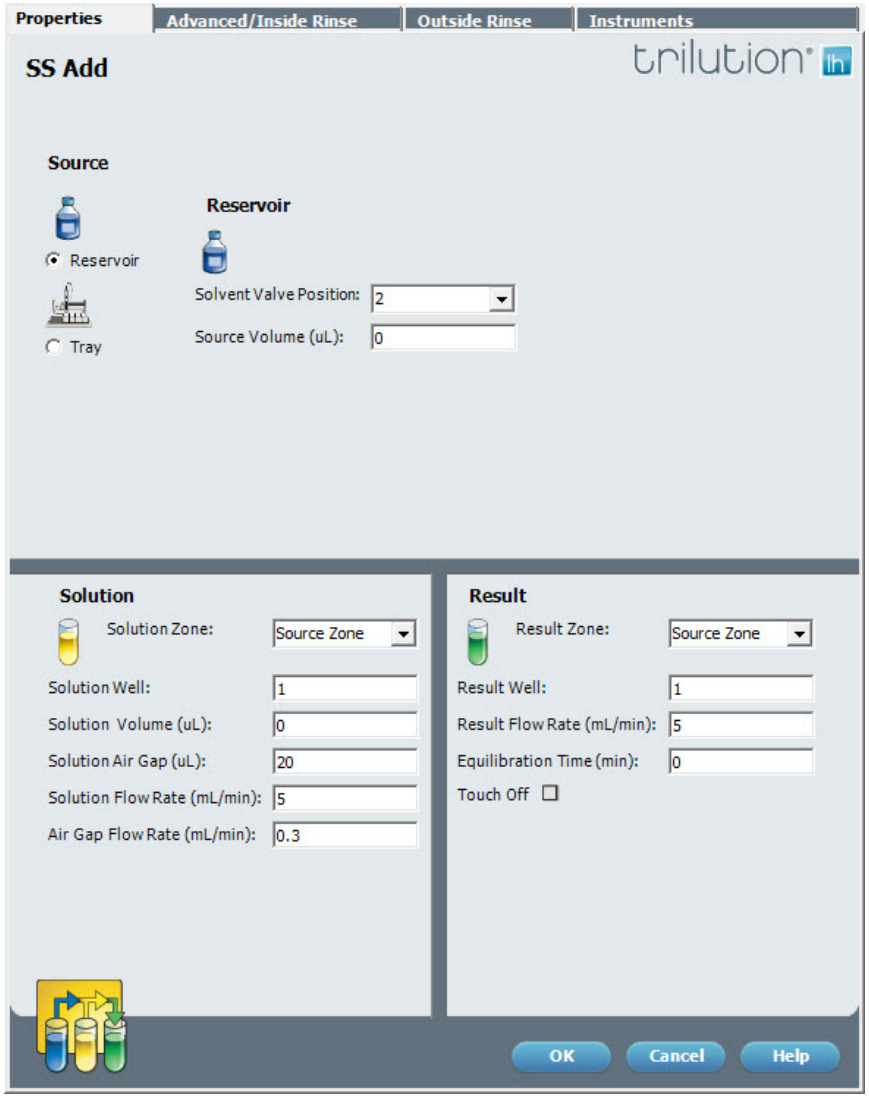
SS Liquid Handling Tasks

	GILSON TASK NAME AND DESCRIPTION
	SS Add This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone.
	SS Aliquot This task dispenses the liquid (source) from the reservoir or tray equally to each of the wells of the result zone. This task should be used in Batch mode only.
	SS Cherry Pick This task transfers liquid (source) from wells in the source zone to wells in the result zone.
	SS Derivatize This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone and then mixes with liquid or air.
	SS Dilute This task dispenses the specified volumes of liquid (source) from the tray and another liquid (diluent) from the reservoir or tray to the wells of the result zone.
	SS Dispense This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.
	SS Dispense Random to Random This task transfers liquid (source) from wells in the source zone to random wells in the result zone.
	SS Inject This task performs a partial loop, total loop, or centered loop injection using a GX Direct Injection Module.

	SS Mix This task aspirates air or liquid and then dispenses it into a well a specified number of times.
	SS Prime Pump This task primes the transfer tubing with reservoir solvent in the result zone.
	SS Rinse Probes This task rinses the inside and outside of the probe using liquid from the pump reservoir.
	SS Transfer This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.
	SS Z Inject This task performs a partial loop, total loop, or centered loop injection using a GX Z Injection Module.

SS Add

This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone.



For more information about the properties on each tab, see:

SS Add - Properties

SS Add - Advanced/Inside Rinse

SS Add - Outside Rinse

SS Add - Instruments

SS Add - Sequence of Steps

SS Add - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 µL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Solution 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	

Solution Well	The well in the Solution Zone from which the Solution Volume is drawn.	1
Solution Volume	The quantity of solution.	0 µL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 µL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Add - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Solution Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Solution. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solution Z Offset. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Solution Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solution Z Offset value to move up from the bottom. 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 Solution Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

Solution 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 Solution Z Option when aspirating the Solution Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Add - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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 six defined reference points, selected from a drop-down list, used when performing the outside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. 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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Add - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS ADD - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Move probe to Solution Well in Solution Zone.
3 Aspirate Solution Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
5 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to Solution Well in Solution Zone.
9 Aspirate Solution Air Gap at Air Gap Flow Rate.
10 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
11 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
12 Wait Equilibration Time.
13 Move Z to Z Safe Height.

Dispense

Reservoir

1 Move to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume + Solution Volume + Solution Air Gap at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.

Tray

1 Move to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume + Solution Volume + Solution Air Gap at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
7 Move probe to Inside Rinse Well in Inside Rinse Zone.
8 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate using Solvent Valve at Solvent Valve Position selected.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

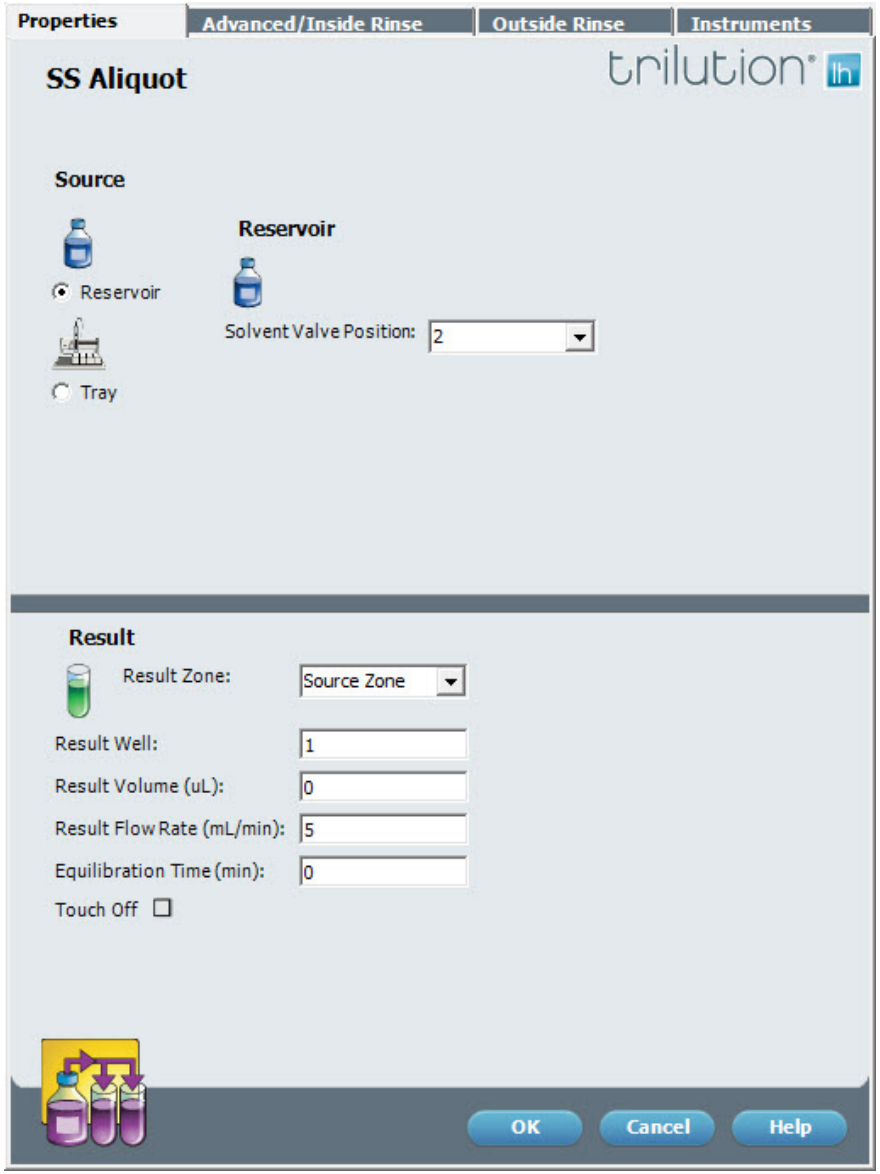
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Aliquot

This task dispenses the liquid (source) from the reservoir or tray equally to each of the wells of the result zone. This task should be used in Batch mode only.



For more information about the properties on each tab, see:

SS Aliquot - Properties

SS Aliquot - Advanced/Inside Rinse

SS Aliquot - Outside Rinse

SS Aliquot - Instruments

SS Aliquot - Sequence of Steps

SS Aliquot - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Zone	The zone from which the Result Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Result Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Extra Volume	An additional volume to the Result 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 Result Volume.	0 µL
Tray Source Air Gap	The quantity of the air gap aspirated before the Result Volume.	20 µL
Tray Source Flow Rate	The speed at which the Result Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Result Volume is delivered.	
Result Well	The well in the Result Zone to which the Result Volume is delivered.	1
Result Volume	The quantity of liquid delivered to the Result Well in the Result Zone.	0 µL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min

Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Aliquot - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the 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. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. 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 when dispensing to the Result.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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.	5mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Aliquot - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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 six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Aliquot - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS ALIQUOT - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Aliquot Volume [(Result Volume * number of dispenses) + Extra Volume] at Source Flow Rate using Liquid Level Following, if selected. If volume is greater than the transfer tubing, aspirate as much volume as the transfer tubing will hold.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

Reservoir

1 Move to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position and dispense Result Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 Repeat steps 1–5 for subsequent result wells.
7 If Inside Rinse Volume>0
   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Tray

1 Move to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position and dispense Result Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
6 Repeat steps 1-5 for subsequent result wells. Return to Source Zone to aspirate more source, if necessary.
7 Move probe to Inside Rinse Well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

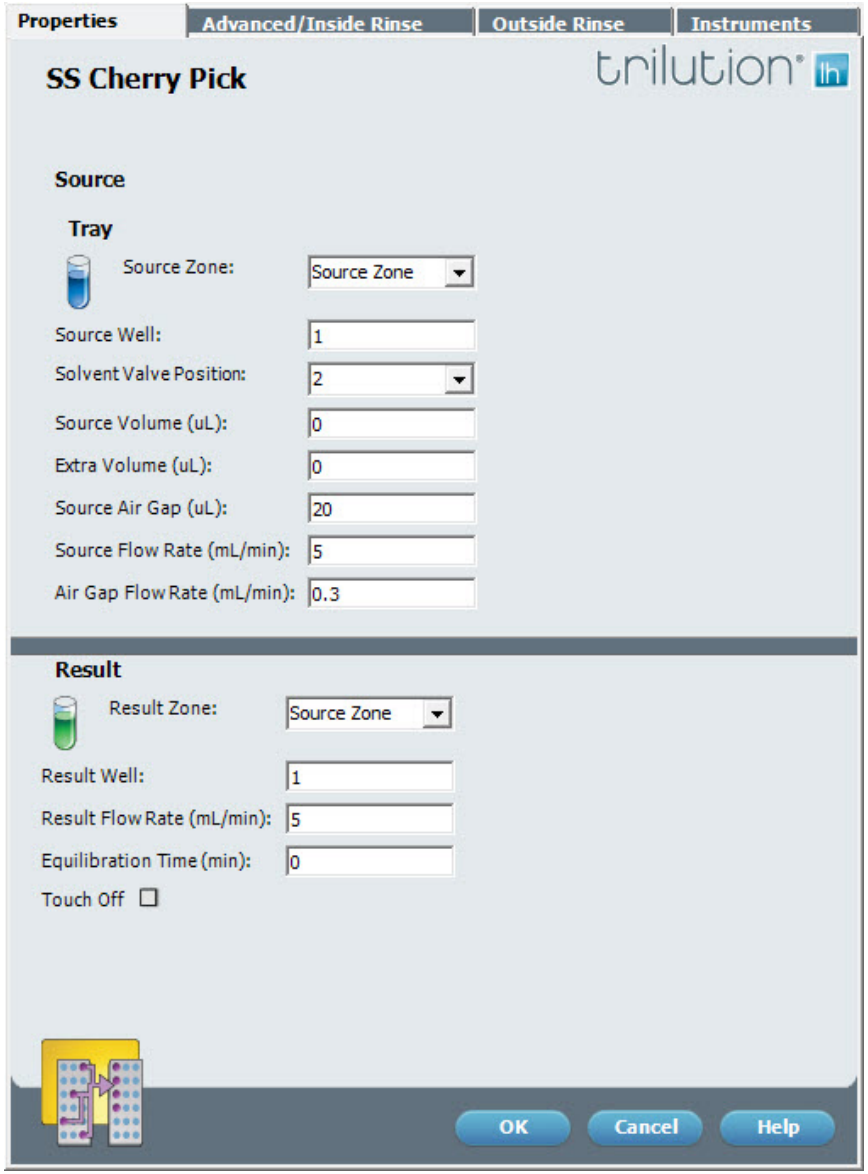
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Cherry Pick

This task transfers liquid (source) from wells in the source zone to wells in the result zone.



For more information about the properties on each tab, see:

[SS Cherry Pick - Properties]

[SS Cherry Pick - Advanced/Inside Rinse]

[SS Cherry Pick - Outside Rinse]

[SS Cherry Pick - Instruments]

[SS Cherry Pick - Sequence of Steps]

SS Cherry Pick - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. Enter #x where x is the name defined in the sample list.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which to dispense the source volume. Enter #x where x is the name defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Cherry Pick - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Cherry Pick - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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

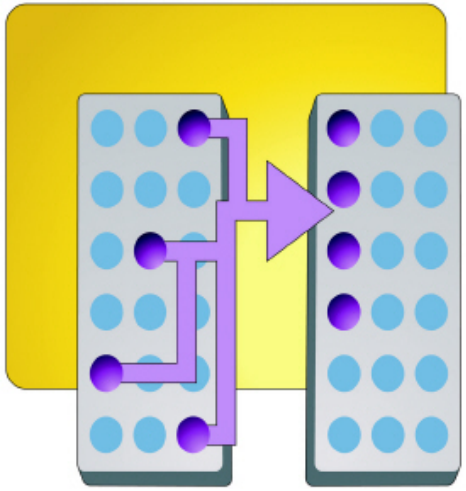
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Cherry Pick - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS CHERRY PICK - 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 Source Air Gap at Air Gap Flow Rate.
3 Move to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position and dispense Source Volume at the Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height. If Source Volume is greater than transfer tubing volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until source volume delivered.
6 Move Z to Z Safe Height.
7 Move probe to Inside Rinse Well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at the Result Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

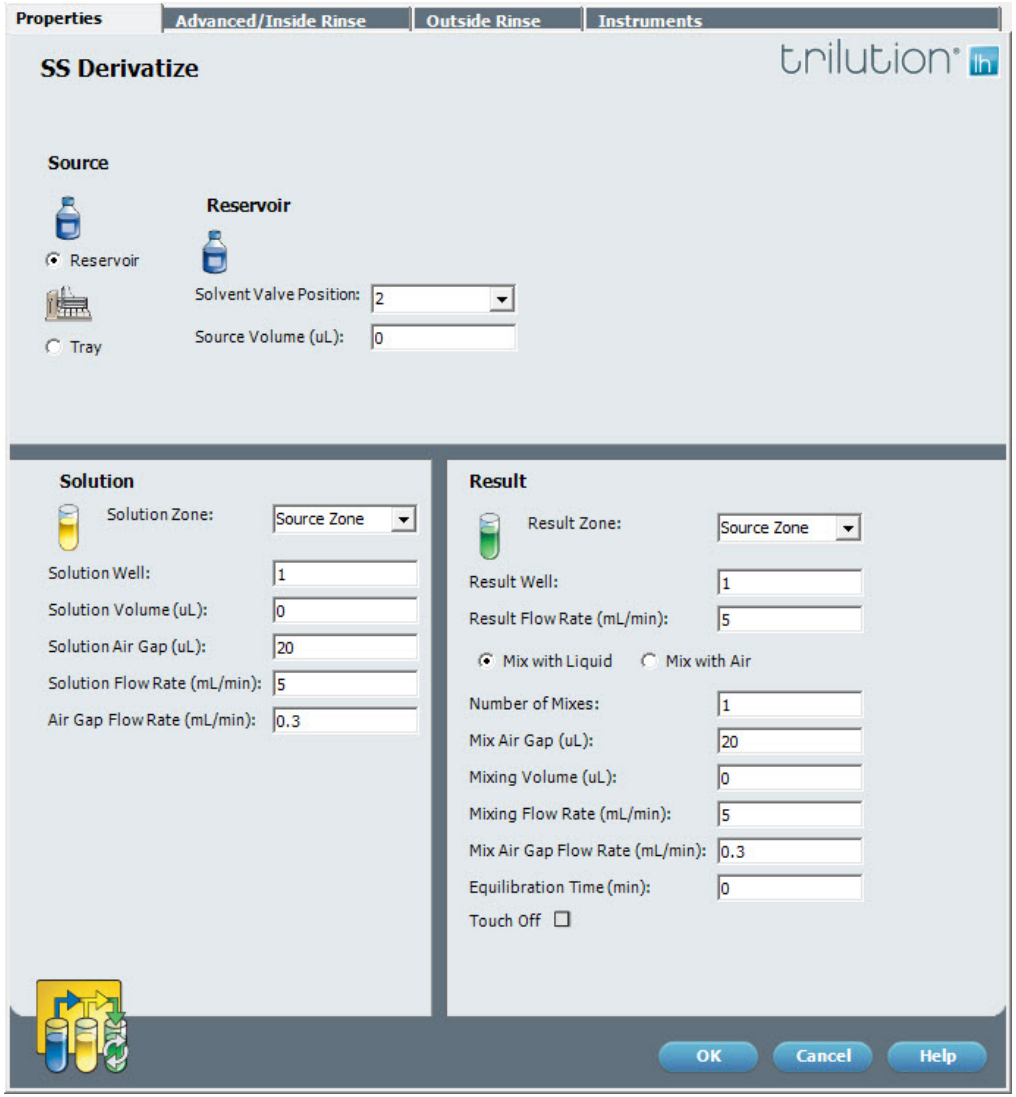
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Derivatize

This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone and then mixes with liquid or air.



For more information about the properties on each tab, see:

- SS Derivatize - Properties
- SS Derivatize - Advanced/Inside Rinse
- SS Derivatize - Outside Rinse
- SS Derivatize - Instruments
- SS Derivatize - Sequence of Steps

SS Derivatize - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 µL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	

Solution Well	The well in the Solution Zone from which the Solution Volume is drawn.	1
Solution Volume	The quantity of a solution.	0 µL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 µL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Air	Select box to mix with air.	
Mix with Liquid	Select box to mix with liquid.	
Number of Mixes	Number of times the task should repeat the commands related to mixing.	1
Mix Air Gap	The quantity of the air gap aspirated before the Mixing Volume.	20 µL
Mixing Volume	The quantity of air or liquid used as part of a mixing process.	0 µL
Mixing Flow Rate	The speed at which the mixing volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix Air Gap Flow Rate	The speed at which the Mix Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Derivatize - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset, Solution Z Offset, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Solution Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating the Solution. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solution Z Offset. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Solution Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solution Z Offset value to move up from the bottom. 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 Solution Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Solution 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 Solution Z Option when aspirating the Solution Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the 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. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. 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 when dispensing to the Result.	2 mm

Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. 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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Derivatize - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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 six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Derivatize - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS DERIVATIZE - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Mix
4 Inside Rinse
5 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Move probe to Solution Well in Solution Zone.
3 Aspirate Solution Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
5 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
6 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to Solution Well in Solution Zone.
9 Aspirate Solution Air Gap at Air Gap Flow Rate.
10 Lower probe into well to Solution Z Option and Solution Z Offset using Liquid Level Detection, if selected.
11 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected.
12 Wait Equilibration Time.
13 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume + Solution Air Gap + Solution Volume at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
7 If Source from Tray:
   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Source Air Gap at Result Flow Rate.
   d) Move Z to Z Safe Height.

Mix

Liquid

1 Move probe to Result Well in Result Zone (same as in Dispense).
2 Aspirate Mix Air Gap Volume at Mix Air Gap Flow Rate.
3 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
4 Aspirate Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Lower probe into well to Result Z Option and Result Z Offset.
   Note: If Liquid Level Following is selected, the Result Z Option will use Auto Calculate.
7 Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected.
8 Wait Equilibration Time.
9 Repeat steps 3–8 until Number of Mixes completes.
10 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
11 Move probe to Inside Rinse Well in Inside Rinse Zone.
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
13 Dispense Mix Air Gap Volume at Mixing Flow Rate.

Air

1 Move probe to Result Well in Result Zone (same as in Dispense).
2 Aspirate Mix Air Gap Volume at Mix Air Gap Flow Rate.
3 Move Z to Z Safe Height.
4 Aspirate Mixing Volume at Mixing Flow Rate.
5 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
6 Switch solvent valve to Solvent Valve Position and dispense Mixing Volume at Mixing Flow Rate.
7 Wait Equilibration Time.
8 Repeat steps 3–7 until Number of Mixes completes.
9 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
10 Move probe to Inside Rinse Well in Inside Rinse Zone.
11 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
12 Dispense Mix Air Gap Volume at Mixing Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

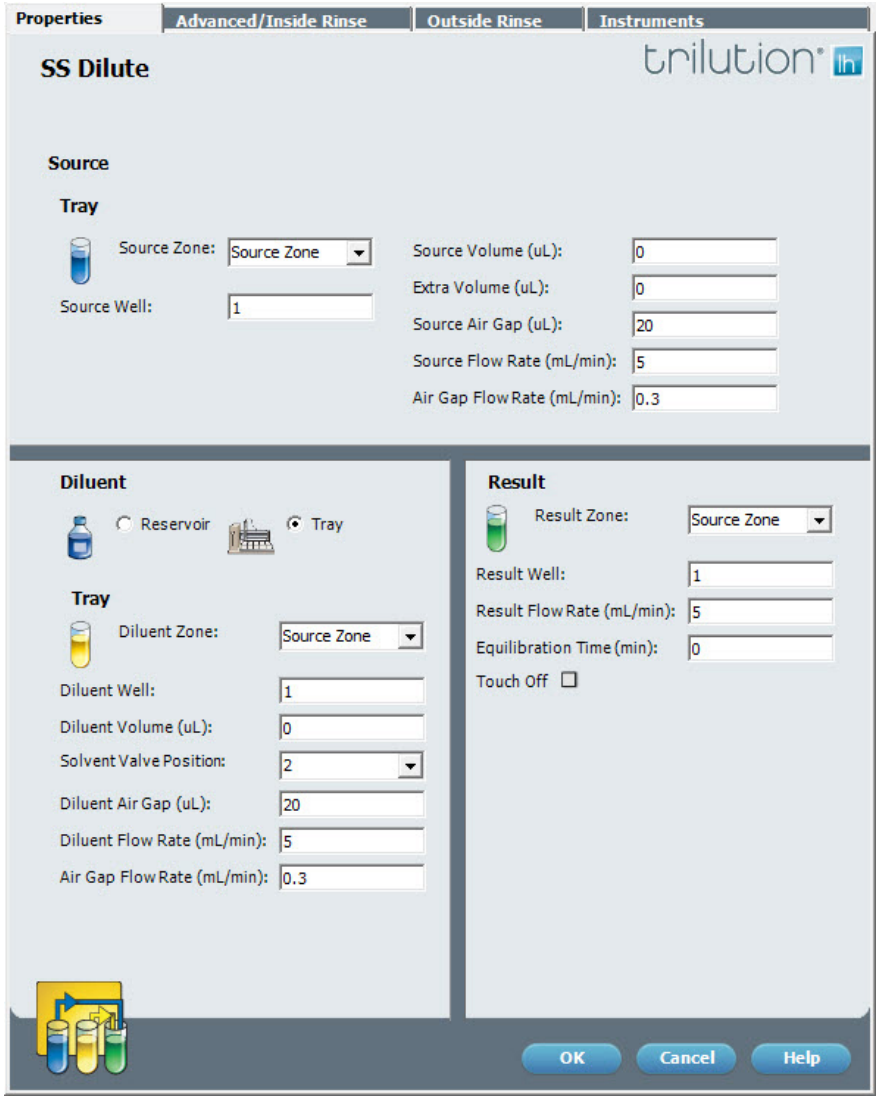
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Dilute

This task dispenses the specified volumes of liquid (source) from the tray and another liquid (diluent) from the reservoir or tray to the wells of the result zone.



For more information about the properties on each tab, see:

SS Dilute - Properties

SS Dilute - Advanced/Inside Rinse

SS Dilute - Outside Rinse

SS Dilute - Instruments

SS Dilute - Sequence of Steps

SS Dilute - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Diluent	Select Reservoir or Tray.	Tray
Tray Diluent Zone	The zone from which the Diluent Volume is drawn.	
Tray Diluent Well	The well in the Diluent Zone from which the Diluent Volume is drawn.	1
Tray Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 µL
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Diluent Air Gap	The quantity of the air gap aspirated before the Diluent Volume.	20 µL

Tray Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Diluent Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 µL
Result Zone	The zone to which the Source and Diluent Volume are delivered.	
Result Well	The well in the Result Zone to which the Source and Diluent Volumes are delivered.	1
Result Flow Rate	The speed at which the Source and Diluent Volumes move out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Dilute - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset, Diluent Z Offset, and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset, Diluent Z Offset, and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Diluent Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Diluent. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Diluent Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Diluent Z Offset value to move up from the bottom. **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	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 when aspirating the Diluent Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm

Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. 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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Dilute - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Zone
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. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Dilute - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS DILUTE - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Diluent Reservoir

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Diluent Tray

1 Move Z to Z Safe Height.
2 Move probe to Source Well in Source Zone.
3 Aspirate Source Air Gap at Air Gap Flow Rate.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 Move probe to Diluent Well in Diluent Zone.
9 Aspirate Diluent Air Gap Volume at Diluent Air Gap Flow Rate.
10 Lower probe into well to Diluent Z Option and Diluent Z Offset using Liquid Level Detection, if selected.
11 Aspirate Diluent Volume at Diluent Flow Rate using Liquid Level Following, if selected.
12 Wait Equilibration Time.
13 Move Z to Z Safe Height

Dispense

Reservoir

1 Move probe to Result Well in Result Zone.

2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume + Source Air Gap + Diluent Volume at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
7 If Inside Rinse Volume>0
   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Tray

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume + Diluent Air Gap + Diluent Volume at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
7 Move probe to Inside Rinse Well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

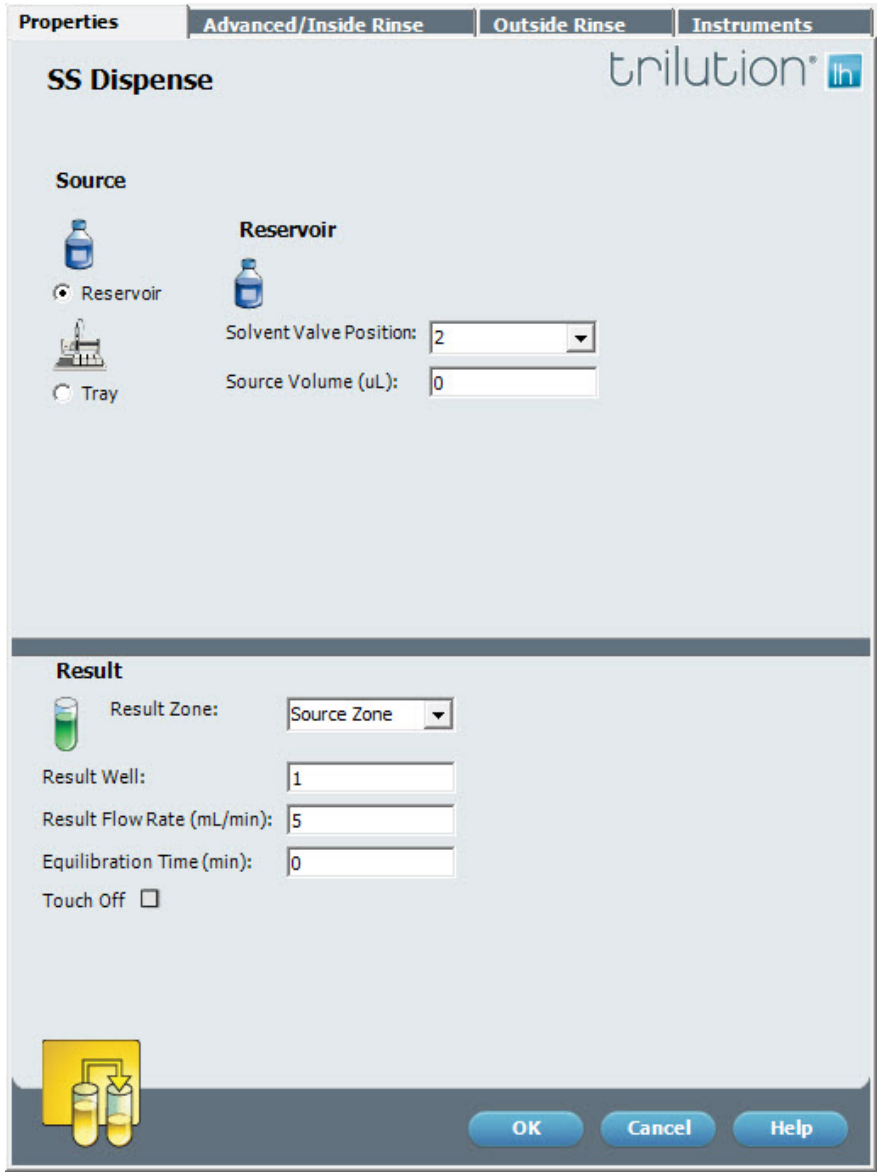
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Dispense

This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.



For more information about the properties on each tab, see:

[SS Dispense - Properties]

[SS Dispense - Advanced/Inside Rinse]

[SS Dispense - Outside Rinse]

[SS Dispense - Instruments]

[SS Dispense - Sequence of Steps]

SS Dispense - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 µL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min

Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Dispense - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the 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. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. 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 when dispensing to the Result.	2 mm

Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. 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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Dispense - Outside Rinse

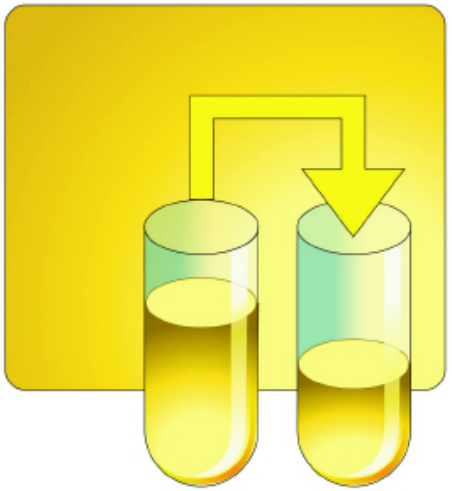
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Dispense - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS DISPENSE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate
2 Dispense
3 Inside Rinse
4 Outside Rinse

Aspirate

Reservoir

1 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position and dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
6 If Source from Tray and Source Volume is greater than Transfer Tubing volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume is delivered.

7 If Source from Tray:
   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Source Air Gap + Extra Volume at Result Flow Rate.

   If Source from Reservoir and Inside Rinse Volume>0:
   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

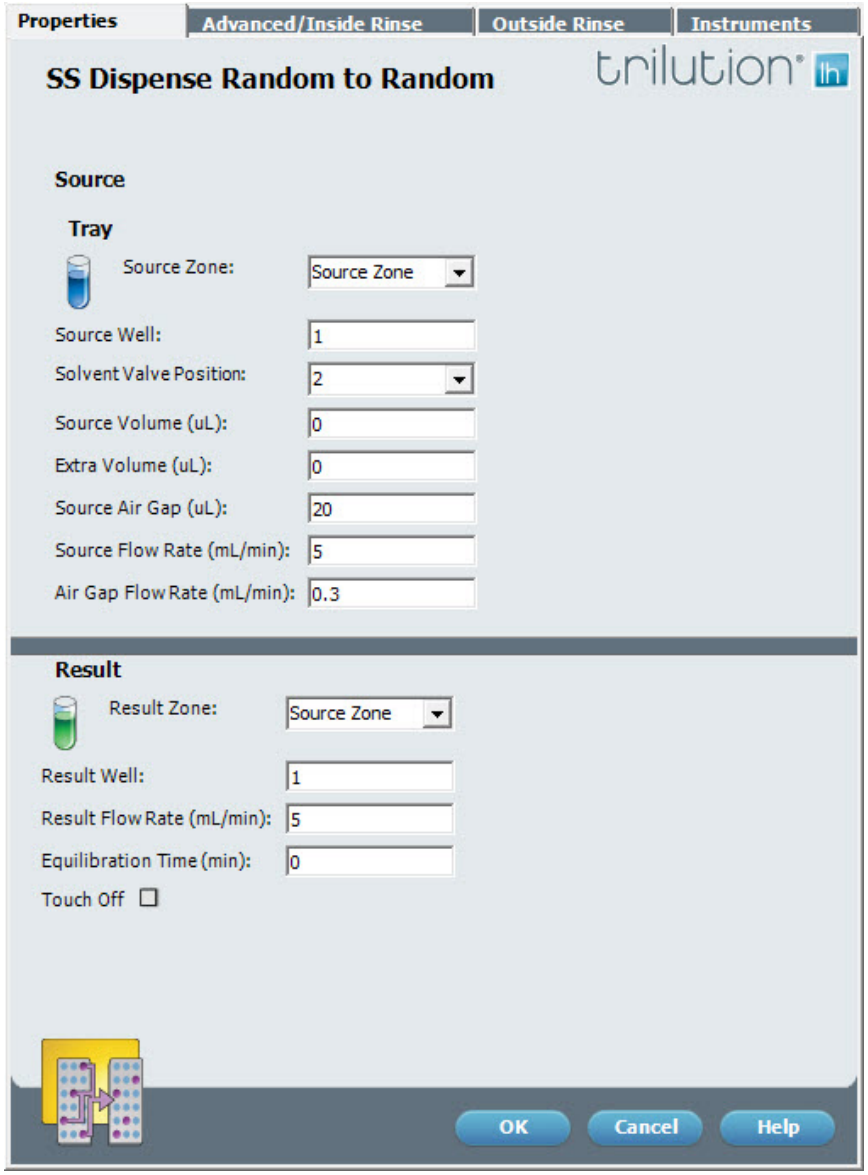
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Dispense Random to Random

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.



For more information about the properties on each tab, see:

SS Dispense Random to Random - Properties
SS Dispense Random to Random - Advanced/Inside Rinse
SS Dispense Random to Random - Outside Rinse
SS Dispense Random to Random - Instruments

SS Dispense Random to Random - Sequence of Steps

SS Dispense Random to Random - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Dispense Random to Random - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the 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. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. 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 when dispensing to the Result.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Dispense Random to Random - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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

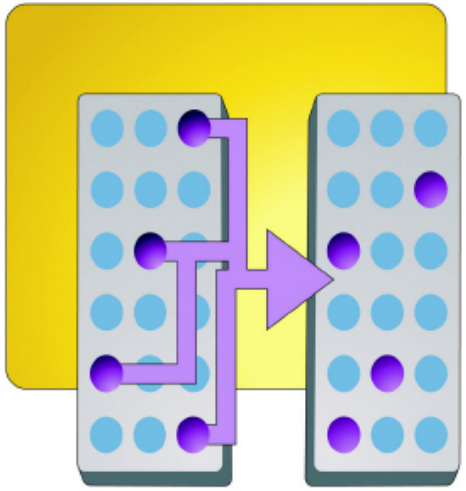
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. Absolute Value: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. 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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Dispense Random to Random - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS DISPENSE RANDOM TO RANDOM - 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 Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
7 If Source Volume is greater than Transfer Tubing volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered.
8 Move probe to Inside Rinse Well in Inside Rinse Zone.
9 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
10 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

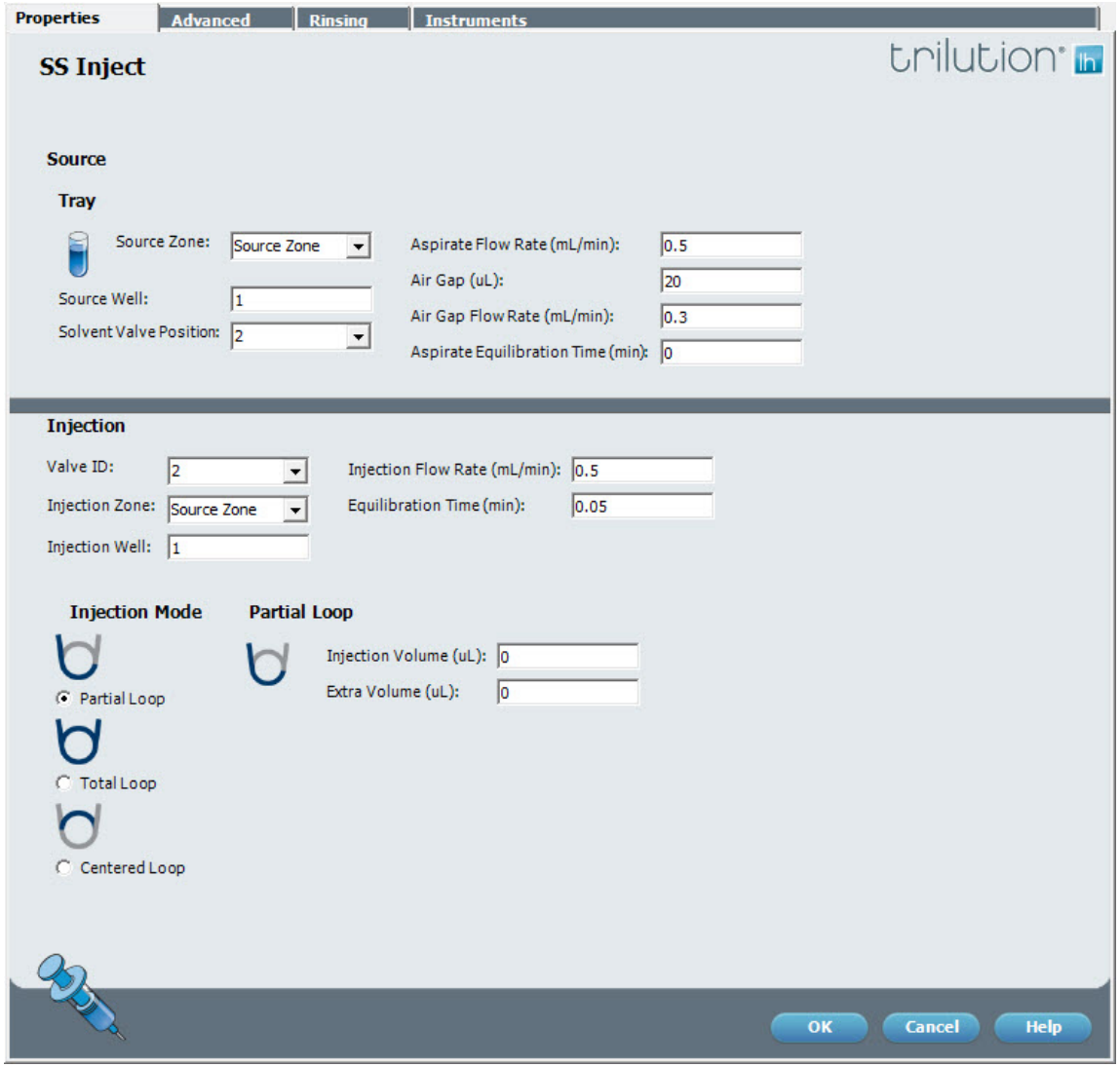
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Inject

This task performs a partial loop, total loop, or centered loop injection using a GX Direct Injection Module.



For more information about the properties on each tab, see:

SS Inject - Properties

SS Inject - Advanced

SS Inject - Rinsing

SS Inject - Instruments

SS Inject - Sequence of Steps

SS Inject - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Injection Volume is drawn.	
Source Well	The well in the Source Zone from which the Injection Volume is drawn.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Aspirate Flow Rate	The speed at which the Injection Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	0.5 mL/min
Air Gap	The quantity of the air gap aspirated before the Injection Volume.	20 µL
Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Aspirate Equilibration Time	Time the program waits after aspirating before moving out of the well.	0 min
Valve ID	For the GX-281, enter 2 for the Left GX Direct Injection Module or 3 for the Right GX Direct Injection Module.	2
Injection Zone	The zone to which the Injection Volume is dispensed.	
Injection Well	The well in the Injection Zone to which the Injection Volume is delivered.	1
Injection Flow Rate	The speed at which the Injection Volume moves out of the probe and into the injection port.	0.5 mL/min
Equilibration Time	The time the program waits after dispensing to the injection port before moving out of the well.	0.05 min
Injection Mode	Select Partial Loop, Total Loop, or Centered Loop.	Partial Loop
Partial Loop Injection Volume	The quantity of a sample.	0 µL
Partial Loop Extra Volume	An additional volume to the Injection 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

Total Loop Extra Volume	An additional volume to the Injection 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.	0 µL
Total Loop Loop Volume	The capacity of the installed sample loop.	0 µL
Total Loop Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill * Loop Volume.	5
Centered Loop Bracket Source with	Select Solvent to bracket the source with a selectable solvent. Select Air to bracket the source with air gaps.	Solvent
Centered Loop Source Volume	The quantity of a sample.	0 µL
Centered Loop (Bracket Source with Solvent) Solvent Zone	The zone from which the Solvent Volumes are drawn.	
Centered Loop (Bracket Source with Solvent) Solvent Well	The well in the Solvent Zone from which the Solvent Volumes are drawn.	1
Centered Loop (Bracket Source with Solvent) Solvent Air Gap	The quantity of the air gap aspirated before and after the Source Volume.	0
Centered Loop (Bracket Source with Solvent) Front Solvent Volume	The quantity of solvent aspirated before the Source Volume.	0 µL
Centered Loop (Bracket Source with Solvent) Back Solvent Volume	The quantity of solvent aspirated after the Source Volume.	0 µL
Centered Loop (Bracket Source with Air) Front Air Gap Volume	The quantity of air gap aspirated before the Source Volume.	20 µL

Centered Loop (Bracket Source with Air) Back Air Gap Volume	The quantity of air gap aspirated after the Source Volume.	20 µL
Centered Loop Push Volume	The volume of reservoir solvent used to push the injection volume into the sample loop.	0 µL

SS Inject - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the height at which the liquid was detected. **Note**: If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom.	Tube Bottom

	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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Injection Z Option	Defined reference point when dispensing to the Injection Zone. **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.	Tube Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom when dispensing to the Injection Zone.	0 mm
Centered Loop (Bracket Source with Solvent) Solvent Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating the Solvent. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solvent Z Offset. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Solvent Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solvent Z Offset value to move up from the bottom. **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 Solvent Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Centered Loop (Bracket Source with Solvent) Solvent Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from reference point defined by the Solvent Z Option when aspirating the Front or Back Solvent Volume.	2 mm
Injection Coordination	Select None or Contact Coordination.	Contact Coordination

Contact Coordination Contact	Enter the number that corresponds to the output contact to act on for the instrument selected. This contact is used to coordinate the injection with a data collection program.	1
Contact Coordination Pulse Duration	Length of time the program will wait between each output contact state change.	0.05 min

SS Inject - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port. For a range of suggested flow rate values, see Flow Rates.	4 mL/min
Injection Rinse Volume	The quantity of liquid used to rinse the injection port.	500 µL
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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 six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Inject - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

Injector	The injector or injection module that the task will affect.	

SS INJECT - SEQUENCE OF STEPS

The following injection modes are available:

- Partial Loop
- Total Loop
- Centered Loop (Bracket Source with Solvent)
- Centered Loop (Bracket Source with Air)

The following is an overview for the sequence of steps.

Partial Loop

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Air Gap at Air Gap Flow Rate.
4 Move probe to Source Well in Source Zone.
5 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
6 Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
7 Wait Aspirate Equilibration Time.
8 Move Z to Z Safe Height.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Injection Flow Rate.
4 Set injection valve position to Load.
5 Wait 0.02 min.
6 Switch solvent valve to Solvent Valve Position and dispense Injection Volume at Injection Flow Rate.
7 Wait Equilibration Time.
8 Set injection valve position to Inject.
9 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Switch solvent valve to Solvent Valve Position and dispense Air Gap at Injection Rinse Flow Rate.

Injection Rinse

1 Switch solvent valve to Solvent Valve Position and dispense Injection Rinse Volume at Injection Rinse Flow Rate.
2 Move Z to Z Safe Height.

Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

Total Loop

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Air Gap at Air Gap Flow Rate.
4 Move probe to Source Well in Source Zone.
5 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
6 Aspirate (Loop Volume * Loop Volume Overfill) + Extra Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
7 Wait Aspirate Equilibration Time.
8 Move Z to Z Safe Height.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Set injection valve position to Load.
4 Wait 0.02 min.
5 Switch solvent valve to Solvent Valve Position and dispense (Loop Volume * Loop Volume Overfill) at Injection Flow Rate.
6 Wait Equilibration Time.
7 Set injection valve position to Inject.
8 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Switch solvent valve to Solvent Valve Position and dispense Extra Volume at Injection Rinse Flow Rate.
2 Switch solvent valve to Solvent Valve Position and dispense Air Gap at Injection Rinse Flow Rate.

Injection Rinse

1 Switch solvent valve to Solvent Valve Position and dispense Injection Rinse Volume at Injection Rinse Flow Rate.
2 Move Z to Z Safe Height.

Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

Centered Loop (Bracket Source with Solvent)

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Air Gap at Air Gap Flow Rate.
4 Move probe to Solvent Well in Solvent Zone.
5 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
6 Aspirate Front Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
7 Wait Aspirate Equilibration Time.
8 Move Z to Z Safe Height.
9 Aspirate Solvent Air Gap at Air Gap Flow Rate.
10 Move probe to Source Well in Source Zone.
11 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
12 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
13 Wait Aspirate Equilibration Time.
14 Move Z to Z Safe Height.
15 Aspirate Solvent Air Gap at Air Gap Flow Rate.
16 Move probe to Solvent Well in Solvent Zone.
17 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
18 Aspirate Back Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
19 Wait Aspirate Equilibration Time.
20 Move Z to Z Safe Height.
21 Aspirate Air Gap at Air Gap Flow Rate.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Set injection valve position to Load.
4 Wait 0.02 min.
5 Dispense Front Solvent Volume + Solvent Air Gap + Source Volume + Solvent Air Gap + Back Solvent Volume + Air Gap + Push Volume at Injection Flow Rate.
6 Wait Equilibration Time.
7 Set injection valve position to Inject.
8 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Switch solvent valve to Solvent Valve Position and dispense Air Gap at Injection Rinse Flow Rate.

Injection Rinse

1 Switch solvent valve to Solvent Valve Position and dispense Injection Rinse Volume at Injection Rinse Flow Rate.
2 Move Z to Z Safe Height.

Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

Centered Loop (Bracket Source with Air)

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Inject.
3 Aspirate Front Air Gap Volume at Air Gap Flow Rate.
4 Move probe to Source Well in Source Zone.
5 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
6 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
7 Wait Aspirate Equilibration Time.
8 Move Z to Z Safe Height.
9 Aspirate Back Air Gap Volume at Air Gap Flow Rate.

Dispense

1 Move probe to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option (Tube Bottom) and Injection Z Offset.
3 Set injection valve position to Load.
4 Wait 0.02 min.
5 Switch solvent valve to Solvent Valve Position and dispense Source Volume + Back Air Gap Volume + Push volume at Injection Flow Rate.
6 Wait Equilibration Time.
7 Set injection valve position to Inject.
8 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Switch solvent valve to Solvent Valve Position and dispense Front Air Gap Volume at Injection Rinse Flow Rate.

Injection Rinse

1 Switch solvent valve to Solvent Valve Position and dispense Injection Rinse Volume at Injection Rinse Flow Rate.
2 Move Z to Z Safe Height.

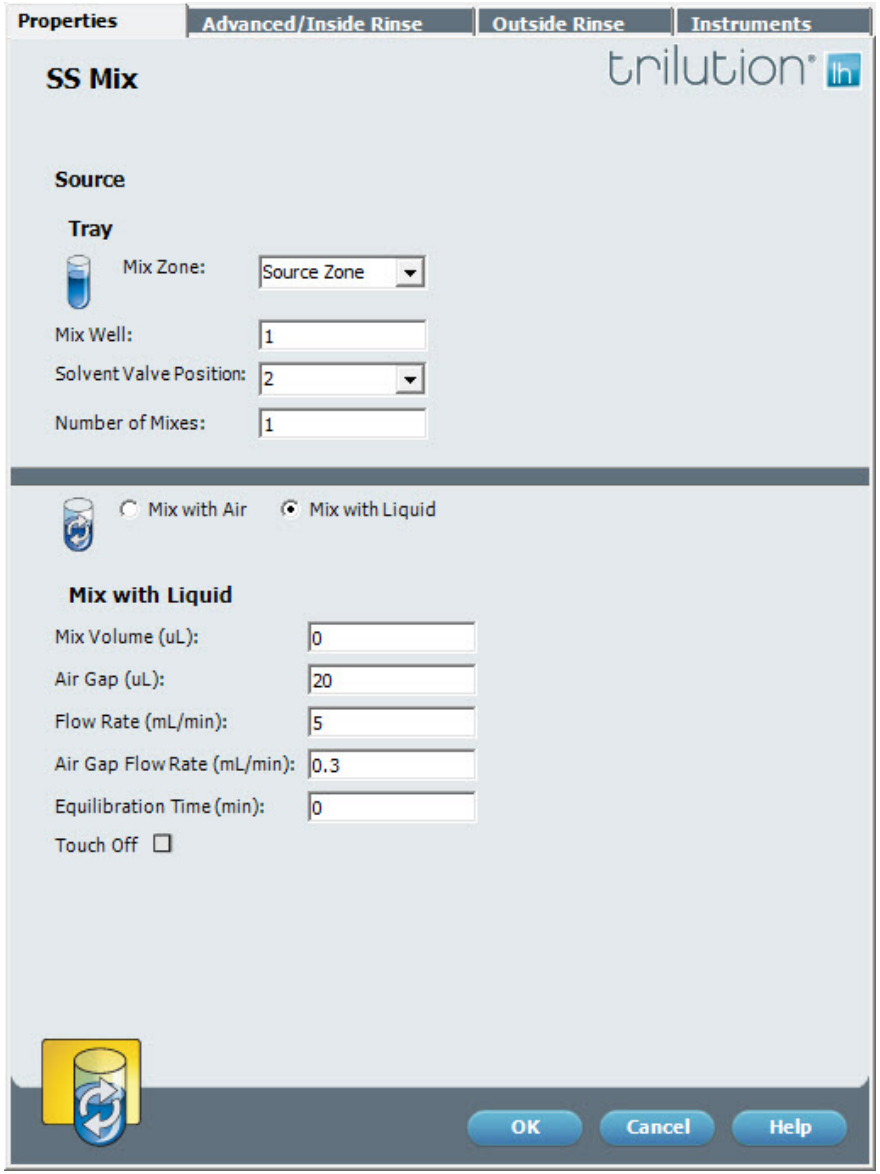
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Mix

This task aspirates air or liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, see:

SS Mix - Properties

SS Mix - Advanced/Inside Rinse

SS Mix - Outside Rinse

SS Mix - Instruments

SS Mix - Sequence of Steps

SS Mix - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Mix Zone	The zone in which the mix is performed.	
Mix Well	The well in the Mix Zone in which the Mix is performed.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Number of Mixes	Number of times the Task should repeat the commands related to mixing.	1
Mix with Air/Mix with Liquid	Select Mix with Air or Mix with Liquid.	Mix with Liquid
Mix with Liquid Mix Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Air Gap	The quantity of an air gap aspirated before the Mix Volume.	20 µL
Mix with Liquid Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Liquid Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Mix with Liquid Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Mix with Liquid Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	
Mix with Air Mix Volume	The quantity of air used as part of a mixing process.	0 µL
Mix with Air Air Gap	The quantity of an air gap aspirated before the Mix Volume.	20 µL
Mix with Air Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Air Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min

Mix with Air Equilibration Time	The time the program waits after each dispense before moving out of the well.	0 min
Mix with Air Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Mix - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Mix Zone. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom

Source 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 Source Z Option when aspirating the Mix Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when delivering to the Mix Zone. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when delivering to the Mix Zone.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Mix - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
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 six defined reference points, selected from a drop-down list, used when performing the outside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. 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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Mix - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS MIX - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Mix with Liquid
2 Mix with Air
3 Inside Rinse
4 Outside Rinse

Mix with Liquid

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Air Gap Flow Rate.
3 Move probe to Mix Well in Mix Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Mix Volume at Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Lower probe into well to Result Z Option and Result Z Offset.

Note: If Liquid Level Following is selected, the Result Z Option will use Auto Calculate.

8 Switch solvent valve to Solvent Valve Position and dispense Mix Volume at Flow Rate using Liquid Level Following, if selected.
9 Wait Equilibration Time.
10 Repeat steps 4–9 for Number of Mixes.

11 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
12 Move probe to Inside Rinse Well in Inside Rinse Zone.
13 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
14 Switch solvent valve to Solvent Valve Position and dispense Air Gap at Flow Rate.

Mix with Air

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Air Gap Flow Rate.
3 Move probe to Mix Well in Mix Zone.
4 Move Z to Z Safe Height.
5 Aspirate Mix Volume at Flow Rate.
6 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
7 Switch solvent valve to Solvent Valve Position and dispense Mix Volume at Flow Rate.
8 Wait Equilibration Time.
9 Repeat 4–8 for Number of Mixes.
10 Perform a Touch Off (X direction), if selected, and move Z to Z Safe Height.
11 Move probe to Inside Rinse Well in Inside Rinse Zone.
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
13 Dispense Air Gap at Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

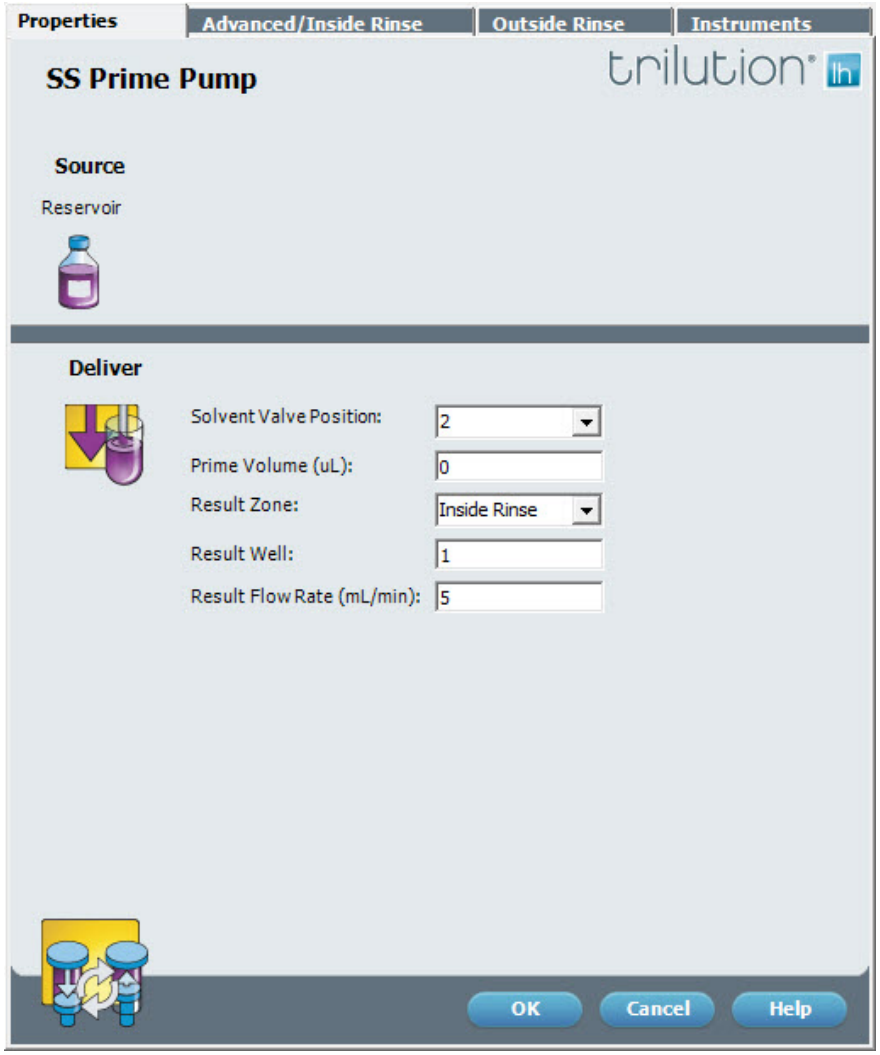
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Prime Pump

This task primes the transfer tubing with reservoir solvent in the result zone.



For more information about the properties on each tab, see:

SS Prime Pump - Properties

SS Prime Pump - Advanced/Inside Rinse

SS Prime Pump - Outside Rinse

SS Prime Pump - Instruments

SS Prime Pump - Sequence of Steps

SS Prime Pump - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Source for Prime Pump is Reservoir.	Reservoir
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Prime Volume	The quantity of the prime.	0 µL
Result Zone	The zone to which the Prime Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Prime Volume is delivered.	1
Result Flow Rate	The speed at which the Prime Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min

SS Prime Pump - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when dispensing to the Result.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. 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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Prime Pump - Outside Rinse

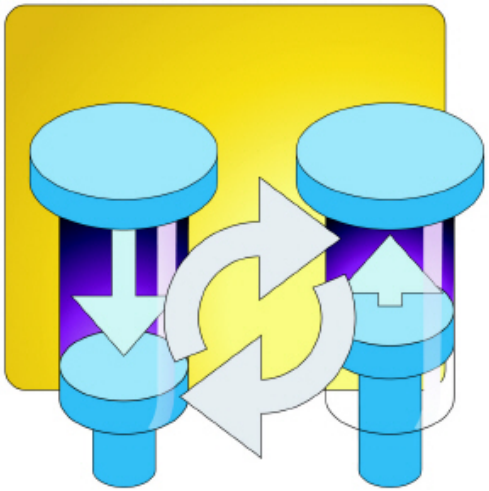
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Prime Pump - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS PRIME PUMP - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Deliver
2 Inside Rinse
3 Outside Rinse

Deliver

1 Move Z to Z Safe Height.
2 Move probe to Result Well in Result Zone.
3 Lower probe into well to Result Z Option and Result Z Offset.
4 Switch solvent valve to Solvent Valve Position.
5 Dispense Prime Volume at Result Flow Rate.

Inside Rinse

If Inside Rinse Volume>0:

1 If Result Zone/Well is not Inside Rinse Zone/Well:
   a) Move Z to Z Safe Height.
   b) Move probe to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset. 3 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
4 Move Z to Z Safe Height.

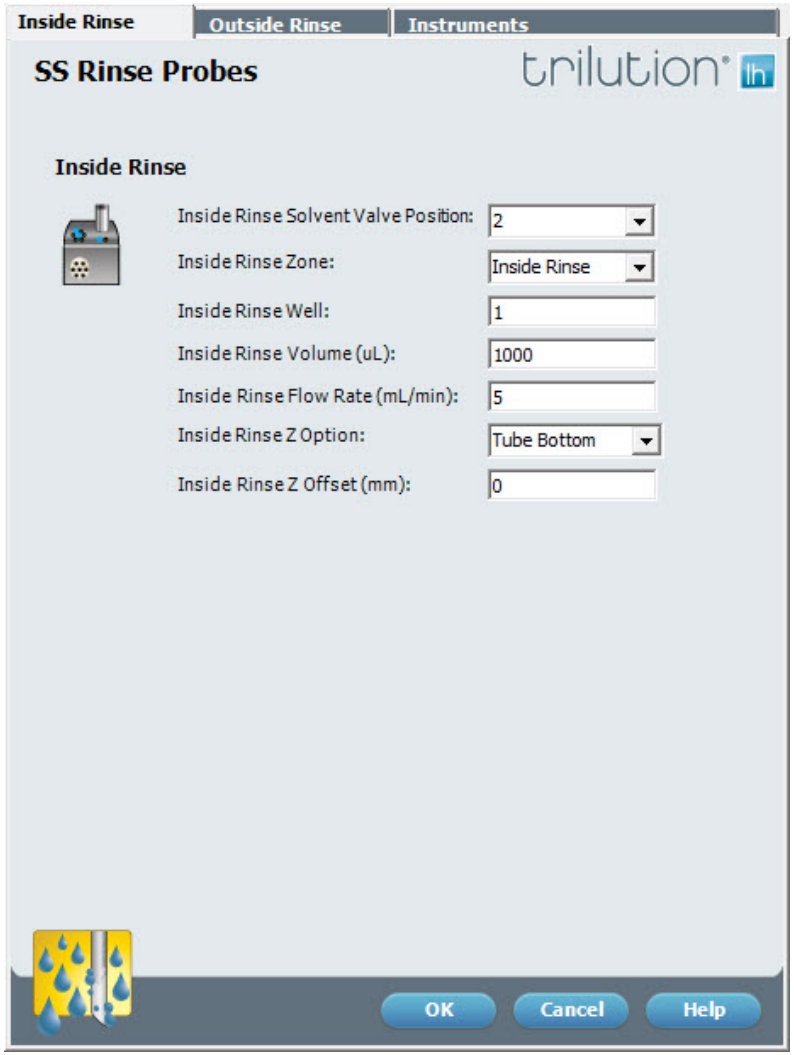
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Rinse Probes

This task rinses the inside and outside of the probe using liquid from the pump reservoir.



For more information about the properties on each tab, see:

SS Rinse Probes - Inside Rinse

SS Rinse Probes - Outside Rinse

SS Rinse Probes - Instruments

SS Rinse Probes - Sequence of Steps

SS Rinse Probes - Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Solvent Rinse Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Rinse Probes - Outside Rinse

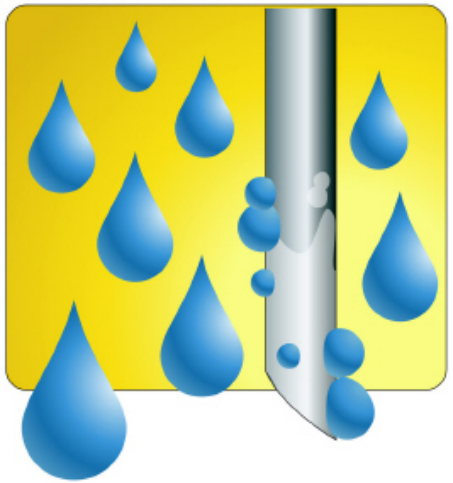
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Rinse Probes - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS RINSE PROBES - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Inside Rinse
2 Outside Rinse

Inside Rinse

If Inside Rinse Volume>0:

1 Move Z to Z Safe Height.
2 Move probe 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 Inside Rinse Solvent Valve Position.
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6 Move Z to Z Safe Height.

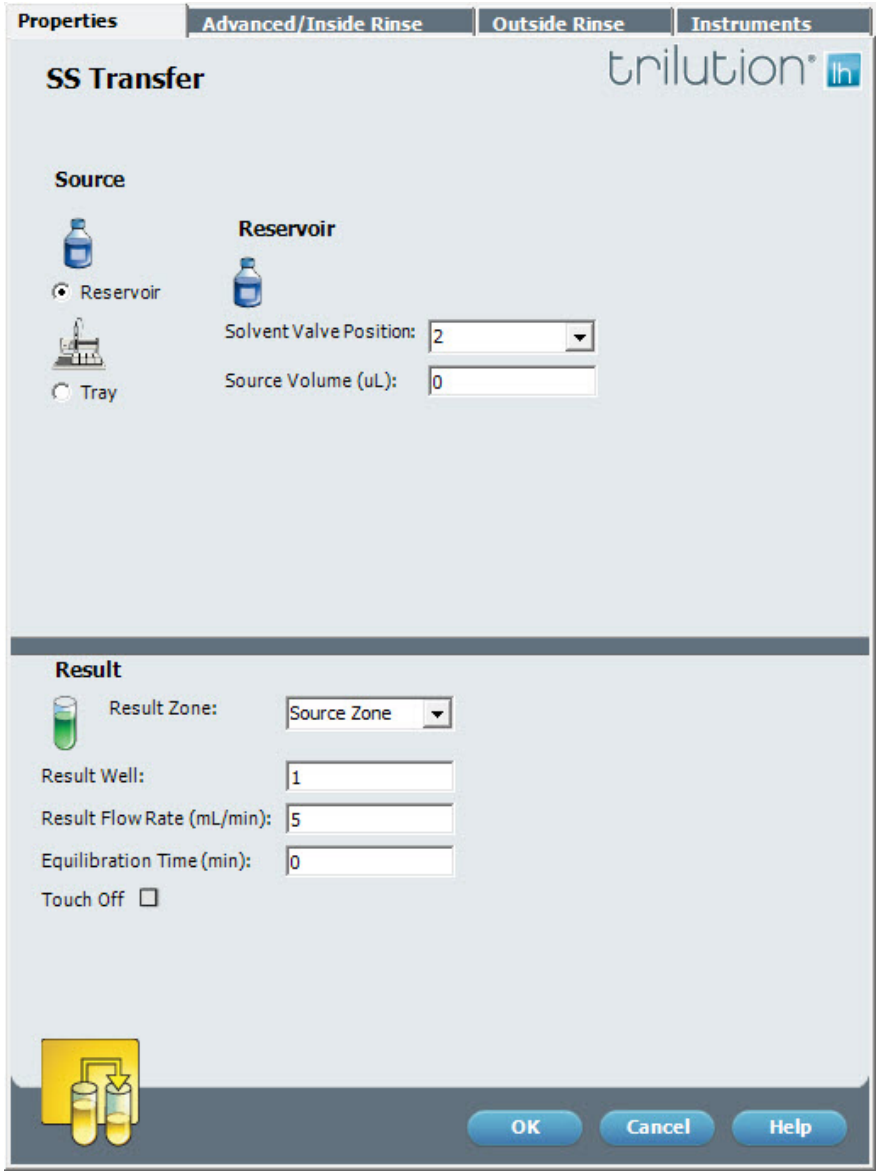
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Transfer

This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.



For more information about the properties on each tab, see:

SS Transfer - Properties

SS Transfer - Advanced/Inside Rinse

SS Transfer - Outside Rinse

SS Transfer - Instruments

SS Transfer - Sequence of Steps

SS Transfer - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 µL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min

Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move in the X direction to the edge of the well after dispensing.	

SS Transfer - Advanced/Inside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Result Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the 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. Top: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. 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 when dispensing to the Result.	2 mm

Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Transfer - Outside Rinse

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse

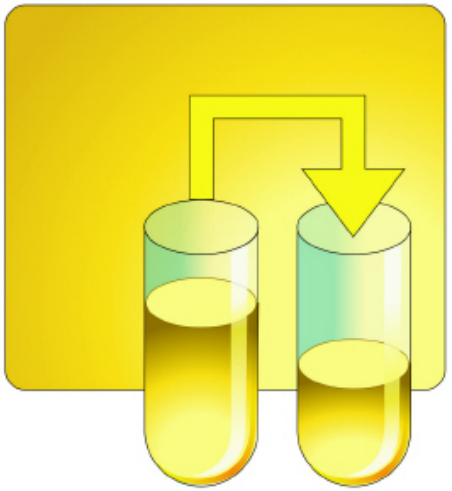
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	5 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. 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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Transfer - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	

SS 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

Reservoir

1 Move Z to Z Safe Height.

Tray

1 Move Z to Z Safe Height.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.

Dispense

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset using Liquid Level Detection, if selected.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time.
6 Perform a Touch Off (X-direction), if selected, and move Z to Z Safe Height.
7 If Source from Tray and Source Volume is greater than Transfer Tubing volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume is delivered.
8 If Source from Tray:
   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Source Air Gap + Extra Volume at Result Flow Rate.

   If Source from Reservoir and Inside Rinse Volume>0:

   a) Move probe to Inside Rinse Well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

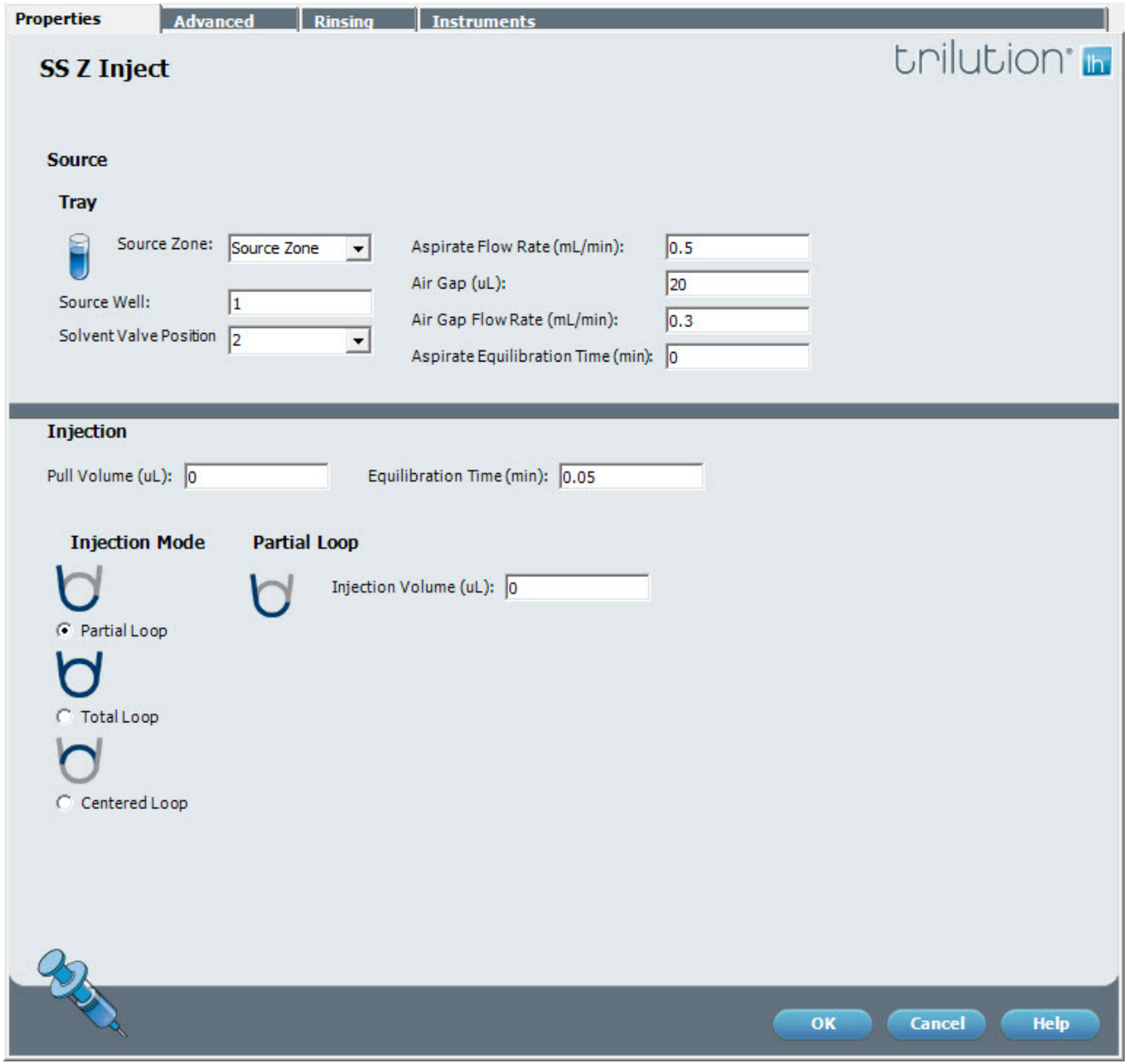
Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

SS Z Inject

This task performs a partial loop, total loop, or centered loop injection using a GX Z Injection Module.



For more information about the properties on each tab, see:

- SS Z Inject - Properties
- SS Z Inject - Advanced
- SS Z Inject - Rinsing
- SS Z Inject - Instruments

SS Z Inject - Sequence of Steps

SS Z Inject - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Injection Volume is drawn.	
Source Well	The well in the Source Zone from which the Injection Volume is drawn.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Aspirate Flow Rate	The speed at which the Injection Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	0.5 mL/min
Air Gap	The quantity of the air gap aspirated before the Injection Volume.	20 µL
Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Aspirate Equilibration Time	The time the program waits after aspirating before moving out of the well.	0 min
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	0 µL
Equilibration Time	The time the program waits after loading the Injection Volume and Pull Volume in the sample loop.	0.05 min
Injection Mode	Select Partial Loop, Total Loop, or Centered Loop.	Partial Loop
Partial Loop Injection Volume	The quantity of a sample.	0 µL
Total Loop Loop Volume	The capacity of the installed sample loop.	0 µL
Total Loop Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill * Loop Volume.	5
Centered Loop Bracket Source with	Select Solvent to bracket the source with a selectable solvent. Select Air to bracket the source with air gaps.	Solvent
Centered Loop (Bracket Source with Solvent) Source Volume	The quantity of a sample.	0 µL

Centered Loop (Bracket Source with Solvent) Solvent Zone	The zone from which the Solvent Volumes are drawn.	
Centered Loop (Bracket Source with Solvent) Solvent Well	The well in the Solvent Zone from which the Solvent Volumes are drawn.	1
Centered Loop (Bracket Source with Solvent) Solvent Air Gap	The quantity of the air gap aspirated before the Solvent Volume.	0
Centered Loop (Bracket Source with Solvent) Front Solvent Volume	The quantity of solvent aspirated after the Source Volume.	0 µL
Centered Loop (Bracket Source with Solvent) Back Solvent Volume	The quantity of solvent aspirated before the Source Volume.	0 µL
Centered Loop (Bracket Source with Air) Source Volume	The quantity of a sample.	0 µL
Centered Loop (Bracket Source with Air) Front Air Gap Volume	The quantity of air gap aspirated after the Source Volume.	20 µL
Centered Loop (Bracket Source with Air) Back Air Gap Volume	The quantity of air gap aspirated before the Source Volume.	20 µL

SS Z Inject - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the liquid surface. Initial Volumes should be set in the sample list when using this option.	

Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset and Solvent Z Offset (Centered Loop, bracketed by Solvent) to the height at which the liquid was detected. Note: If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. 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). Auto Calculate: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. 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 Source Z Offset. Z Adjust: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm

Centered Loop (Bracket Source with Solvent) Solvent Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating the Solvent. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Solvent Z Offset. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Solvent Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Solvent Z Offset value to move up from the bottom. **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 Solvent Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Centered Loop (Bracket Source with Solvent) Solvent Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from reference point defined by the Solvent Z Option when aspirating the Front or Back Solvent Volume.	2 mm
Injection Coordination	Select None or Contact Coordination.	Contact Coordination
Contact Coordination Contact	Enter the number that corresponds to the output contact to act on for the instrument selected. This contact is used to coordinate the injection with a data collection program.	1
Contact Coordination Pulse Duration	Length of time the program will wait between each output contact state change.	0.05 min

SS Z Inject - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	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 six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse

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 six defined reference points, selected from a drop-down list, used when performing the outside rinse. 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). Auto Calculate: Places the probe into the well and at the liquid level using the 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. Top: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. Tube Bottom: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. 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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	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 1–6. The position designated for waste cannot be used.	2

SS Z Inject - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor or solvent system, select the liquid handler.	
Injector	The injector or injection module that the task will affect.	

SS Z INJECT - SEQUENCE OF STEPS

The following injection modes are available:

- Partial Loop
- Total Loop
- Centered Loop (Bracket Source with Solvent)
- Centered Loop (Bracket Source with Air)

The following is an overview for the sequence of steps.

Partial Loop

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set injection valve position to Load.
3 Wait 0.02 min.
4 Aspirate Air Gap at Air Gap Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate Injection Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Pull Volume at Aspirate Flow Rate.
11 Wait Equilibration Time.
12 Set injection valve position to Inject.
13 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Switch solvent valve to Solvent Valve Position and dispense Air Gap at Inside Rinse Flow Rate.
4 Switch solvent valve to Solvent Valve Position and dispense Injection Volume at Inside Rinse Flow Rate.
5 Switch solvent valve to Solvent Valve Position and dispense Pull Volume at Inside Rinse Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

Total Loop

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set injection valve position to Load.
3 Wait 0.02 min.
4 Aspirate Air Gap at Air Gap Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate (Loop Volume * Loop Volume Overfill) at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Pull Volume at Aspirate Flow Rate.
11 Wait Equilibration Time.
12 Set injection valve position to Inject.
13 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Switch solvent valve to Solvent Valve Position and dispense Air Gap at Inside Rinse Flow Rate.
4 Switch solvent valve to Solvent Valve Position and dispense (Loop Volume * Loop Volume Overfill) at Inside Rinse Flow Rate.
5 Switch solvent valve to Solvent Valve Position and dispense Pull Volume at Inside Rinse Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

Centered Loop (Bracket Source with Solvent)

Aspirate (Inject)

1 Move Z to Z Safe Height.
2 Set injection valve position to Load.
3 Wait 0.02 min.
4 Aspirate Air Gap at Air Gap Flow Rate.
5 Move probe to Solvent Well in Solvent Zone.
6 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
7 Aspirate Back Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Solvent Air Gap at Air Gap Flow Rate.
11 Move probe to Source Well in Source Zone.
12 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
13 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
14 Wait Aspirate Equilibration Time.
15 Move Z to Z Safe Height.
16 Aspirate Solvent Air Gap at Air Gap Flow Rate.
17 Move probe to Solvent Well in Solvent Zone.
18 Lower probe into well to Solvent Z Option and Solvent Z Offset using Liquid Level Detection, if selected.
19 Aspirate Front Solvent Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
20 Wait Aspirate Equilibration Time.

21 Move Z to Z Safe Height.
22 Aspirate Air Gap at Air Gap Flow Rate.
23 Aspirate Pull Volume at Aspirate Flow Rate.
24 Wait Equilibration Time.
25 Set injection valve position to Inject.
26 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Switch solvent valve to Solvent Valve Position and dispense Air Gap + Air Gap + Solvent Air Gap + Solvent Air Gap at Inside Rinse Flow Rate.
4 Switch solvent valve to Solvent Valve Position and dispense Front Solvent Volume + Back Solvent Volume at Injection Rinse Flow Rate.
5 Switch solvent valve to Solvent Valve Position and dispense Source Volume at Inside Rinse Flow Rate.
6 Switch solvent valve to Solvent Valve Position and dispense Pull Volume at Inside Rinse Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

Outside Rinse

If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

Centered Loop (Bracket Source with Air)

Aspirate

1 Move Z to Z Safe Height.
2 Set injection valve position to Load.
3 Wait 0.02 min.
4 Aspirate Back Air Gap Volume at Air Gap Flow Rate.
5 Move probe to Source Well in Source Zone.
6 Lower probe into well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
7 Aspirate Source Volume at Aspirate Flow Rate using Liquid Level Following, if selected.
8 Wait Aspirate Equilibration Time.
9 Move Z to Z Safe Height.
10 Aspirate Front Air Gap Volume at Air Gap Flow Rate.
11 Aspirate Pull Volume at Aspirate Flow Rate.
12 Wait Equilibration Time.
13 Set injection valve position to Inject.
14 If Contact Coordination is selected, pulse Contact for Pulse Duration.

Drain

1 Move probe to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Switch solvent valve to Solvent Valve Position and dispense Front Air Gap Volume + Back Air Gap Volume at Inside Rinse Flow Rate.
4 Switch solvent valve to Solvent Valve Position and dispense Source Volume at Inside Rinse Flow Rate.
5 Switch solvent valve to Solvent Valve Position and dispense Pull Volume at Inside Rinse Flow Rate.

Inside Rinse

If Inside Rinse Volume>0

1 Switch solvent valve to Inside Rinse Solvent Valve Position and dispense Inside Rinse Volume at Inside Rinse Flow Rate. If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 µL + transfer tubing volume.
2 Move Z to Z Safe Height.

Outside Rinse

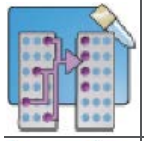
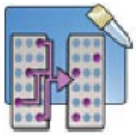
If Outside Rinse Volume>0

1 Move Z to Z Safe Height.
2 Move probe to first well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Switch GX Rinse Pump on at GX 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 µL + transfer tubing volume.
6 Switch GX Rinse Pump off.
7 Move Z to Z Safe Height.
8 Repeat steps 2–7 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station.

TASKS - DISPOSABLE TIPS

Gilson supplies Disposable Tips tasks for use on the Quad-Z 215 with Disposable Tips.

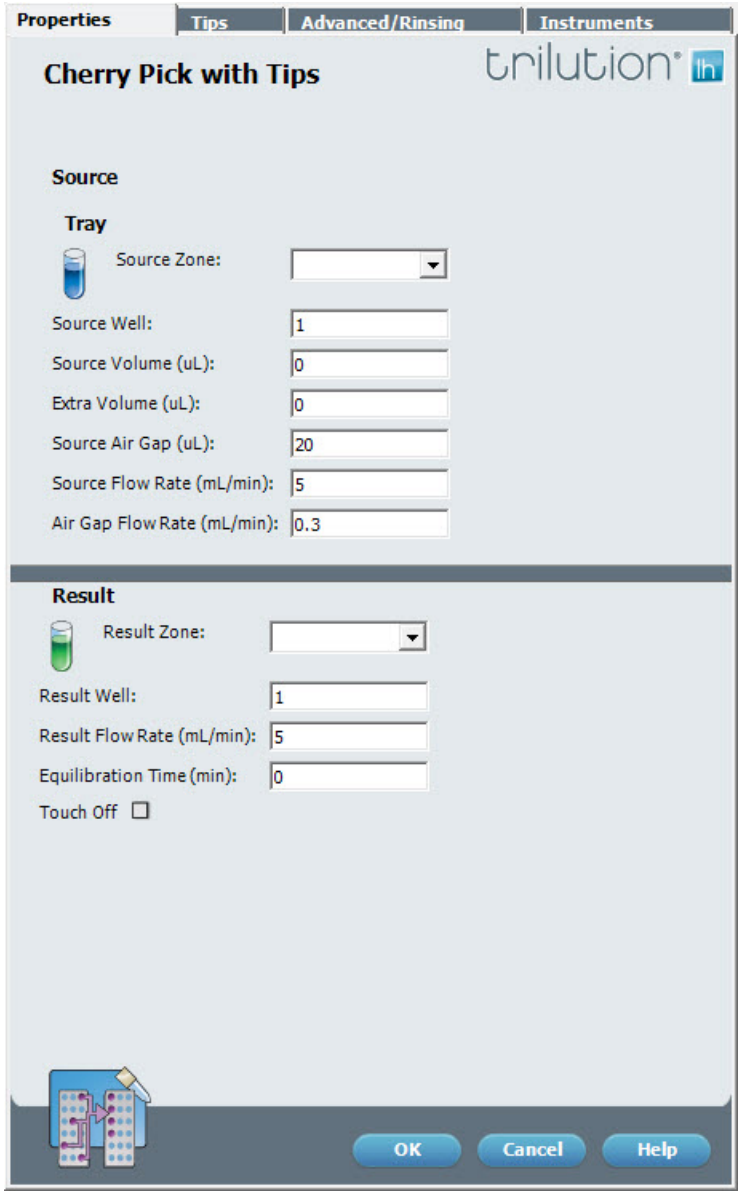
Disposable Tips Tasks

	GILSON TASK NAME AND DESCRIPTION
	Cherry Pick with Tips This task transfers liquid (source) from wells in the source zone to wells in the result zone.
	Dispense Random to Random with Tips This task transfers liquid (source) from wells in the source zone to random wells in the result zone.
	Dispense with Tips This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.
	Eject Tips This task ejects tips to the tip waste zone. When running in Batch mode, create a method with this task ONLY.
	Load Tips This task loads tips. When running in Batch mode, create a method with this task ONLY.
	Mix with Tips This task aspirates air or liquid and then dispenses it into a well a specified number of times.
	Prime Pump with Tips This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.
	Prime Rinse Station This task fills the outside rinse wells with liquid from the pump reservoir.

	Rinse Tip Holders This task rinses the inside and outside of the tip holders.
	Transfer with Tips This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.

Cherry Pick with Tips

This task transfers liquid (source) from wells in the source zone to wells in the result zone.



For more information about the properties on each tab, see:

Cherry Pick with Tips - Properties

Cherry Pick with Tips - Tips

Cherry Pick with Tips - Advanced/Rinsing

Cherry Pick with Tips - Instruments

Cherry Pick with Tips - Sequence of Steps

Cherry Pick with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Cherry Pick with Tips - Tips

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Selected
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Selected
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 µL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface touch off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the sample list and the well dimensions from the bed layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side touch off.	0 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no Rinse Touch Off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm

Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Cherry Pick with Tips - Advanced/Rinsing

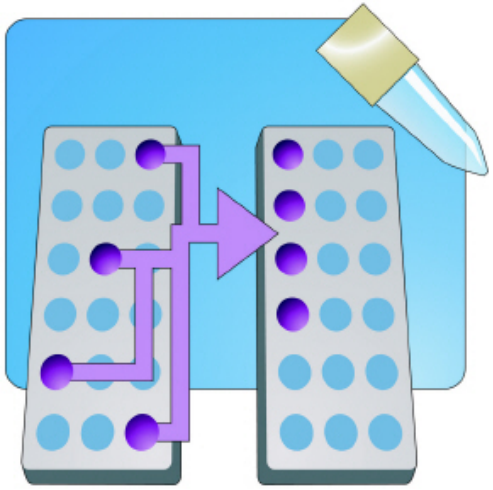
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	Active
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. **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). **Auto Calculate**: Places the probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Auto Calculate
Source 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 Source Z Option when aspirating the Source Volume.	-2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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).	Auto Calculate
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 when dispensing to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm

Cherry Pick with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	



CHERRY PICK WITH TIPS - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Load Tips (Optional)
2 Aspirate
3 Dispense
4 Eject Tips (Optional)
5 Inside Rinse (Optional)
6 Outside Rinse (Optional)
7 Rinse Touch Off

Load Tips (Optional)

1 Move Z to top.
2 If Load Tips Before Task is selected, load tips.

Aspirate

If Extra Volume=0

1 Move Z to top. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (Optional)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

If Extra Volume>0

1 Move Z to top.2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (First Iteration only)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

Dispense

If Extra Volume=0

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Dispense Source Air Gap at Result Flow Rate.
5 Wait Equilibration Time.
6 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered.

If Extra Volume>0

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Side Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered.
7 Move probe to well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Eject Tips (Optional)

1 If Eject Tips After Task is selected:
a) Move Z to top.
b) Move probe to Tip Waste Zone.
c) Eject tips by moving Z to Z Clamp Height.

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

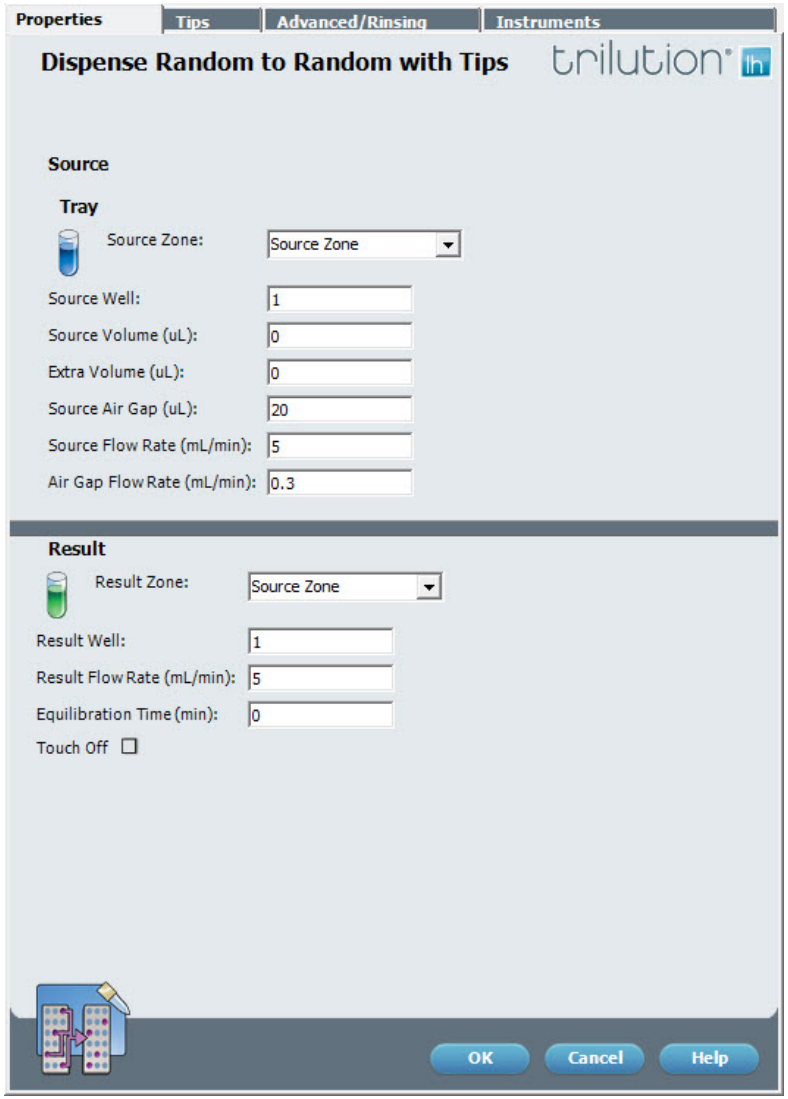
1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Dispense Random to Random with Tips

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.



For more information about the properties on each tab, see:

Dispense Random to Random with Tips - Properties

Dispense Random to Random with Tips - Tips

Dispense Random to Random with Tips - Advanced/Rinsing

Dispense Random to Random with Tips - Instruments

Dispense Random to Random with Tips - Sequence of Steps

Dispense Random to Random with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Source Volume	The quantity of a sample.	0 µL
Extra Volume	An additional volume to the Source 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
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Dispense Random to Random with Tips - Tips

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 µL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface touch off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the sample list and the well dimensions from the bed layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side touch off.	0 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no Rinse Touch Off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm

Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Dispense Random to Random with Tips - Advanced/Rinsing

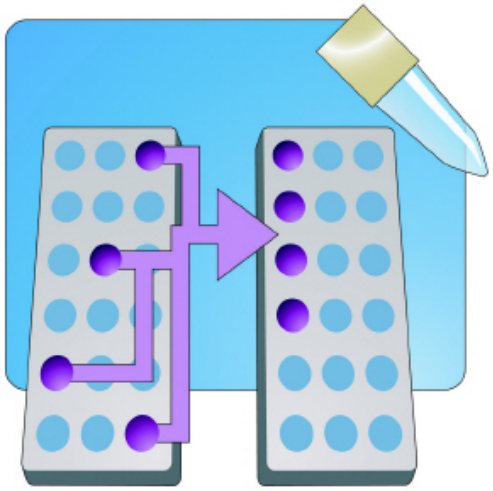
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	Active
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. **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). **Auto Calculate**: Places the probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Auto Calculate
Source 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 Source Z Option when aspirating the Source Volume.	-2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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).	Auto Calculate
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 when dispensing to the Result.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm

Dispense Random to Random with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	



DISPENSE RANDOM TO RANDOM WITH TIPS - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Load Tips (Optional)
2 Aspirate
3 Dispense
4 Eject Tips (Optional)
5 Inside Rinse (Optional)
6 Outside Rinse (Optional)
7 Rinse Touch Off

Load Tips (Optional)

1 Move Z to top.
2 If Load Tips Before Task is selected, load tips.

Aspirate

If Extra Volume=0

1 Move Z to top. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (Optional)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

If Extra Volume>0

1 Move Z to top. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (First Iteration only)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

Dispense

If Extra Volume=0

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Dispense Source Air Gap at Result Flow Rate.
5 Wait Equilibration Time.
6 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered.

If Extra Volume>0

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered.
7 Move probe to well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Eject Tips (Optional)

1 If Eject Tips After Task is selected:
a) Move Z to top.
b) Move probe to Tip Waste Zone.
c) Eject tips by moving Z to Z Clamp Height.

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

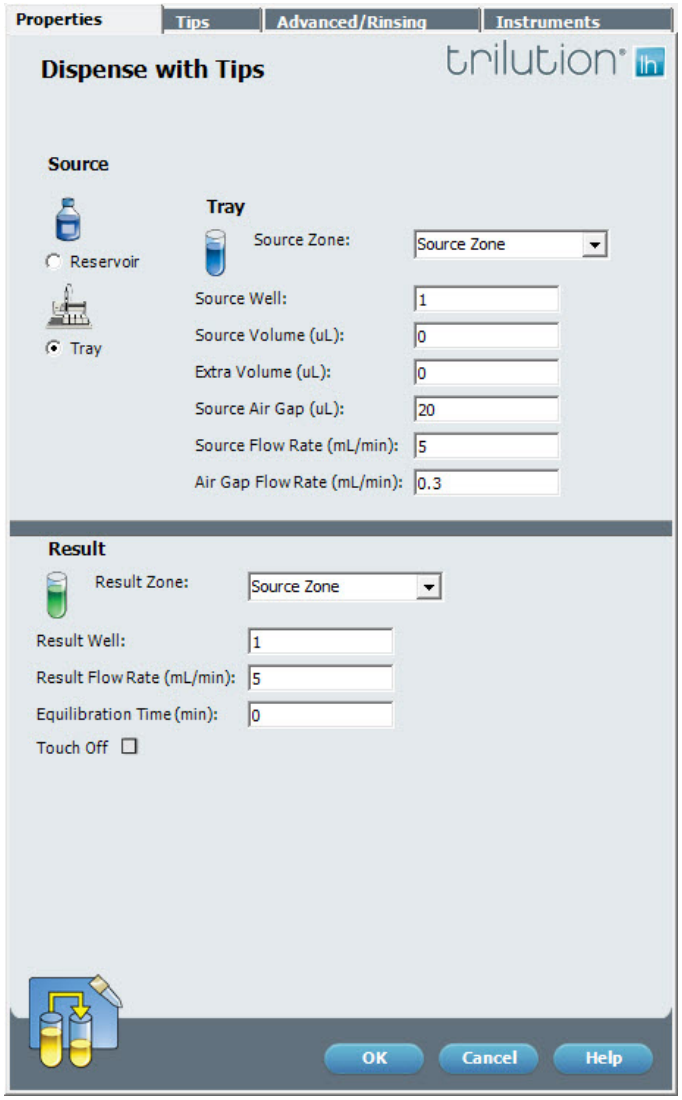
1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Dispense with Tips

This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Dispense with Tips - Properties

Dispense with Tips - Tips

Dispense with Tips - Advanced/Rinsing

Dispense with Tips - Instruments

Dispense with Tips - Sequence of Steps

Dispense with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Tray
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Result Zone	The zone to which the Source Volume is delivered.	

Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Dispense with Tips - Tips

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and the tips will be loaded at the beginning of the task. Clear and the tips will not be loaded. If the tips were previously loaded by another task, clear this option.	Active
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 µL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface touch off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the sample list and the well dimensions from the bed layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm

Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side touch off.	0 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no Rinse Touch Off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Dispense with Tips - Advanced/Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	Active

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. **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). **Auto Calculate**: Places the probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Auto Calculate
Source 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 Source Z Option when aspirating the Source Volume.	-2 mm
Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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).	Auto Calculate
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 when dispensing to the Result.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse

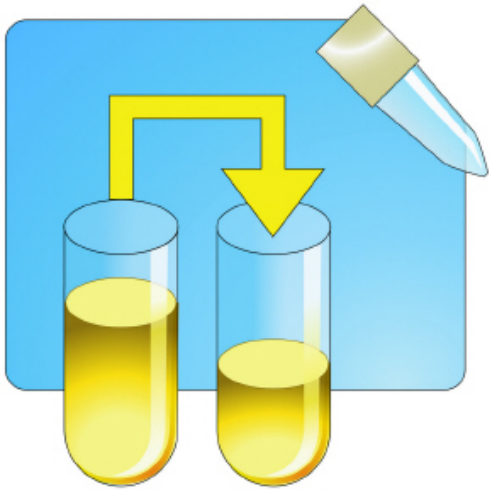
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm

Dispense with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

DISPENSE WITH TIPS - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Load Tips (Optional)
2 Aspirate
3 Dispense
4 Eject Tips (Optional)
5 Inside Rinse (Optional)
6 Outside Rinse (Optional)
7 Rinse Touch Off

Load Tips (Optional)

1 Move Z to top.
2 If Load Tips Before Task is selected, load tips.

Aspirate

Reservoir

1 Move Z to top.
2 Move probe to Result Well in Result Zone.
3 Lower probe into well to Result Z Option and Result Z Offset.
4 Aspirate Source Volume (from Reservoir) at Source Flow Rate.

Tray (if Extra Volume=0)

1 Move Z to top. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (First Iteration only)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

Tray (if Extra Volume>0)

1 Move Z to top.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (First Iteration only)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

Dispense

Reservoir

1 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
2 If Source Volume is greater than tip volume, repeat Aspirate (Reservoir) step 4 and Dispense (Reservoir) step 1 until Source Volume is delivered.
3 Wait Equilibration Time.
4 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

Tray (if Extra Volume=0)

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Dispense Source Air Gap at Result Flow Rate.
5 Wait Equilibration Time.
6 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered.

Tray (if Extra Volume>0)

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.
5 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered.
7 Move probe to well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Eject Tips (Optional)

1 If Eject Tips After Task is selected:
  a) Move Z to top.
  b) Move probe to Tip Waste Zone.
  c) Eject tips by moving Z to Z Clamp Height.

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Eject Tips

This task ejects tips to the tip waste zone. When running in Batch mode, create a method with this task ONLY.

For more information about the properties on each tab, see:

Eject Tips - Properties

Eject Tips - Instruments

Eject Tips - Sequence of Steps

Eject Tips - Properties

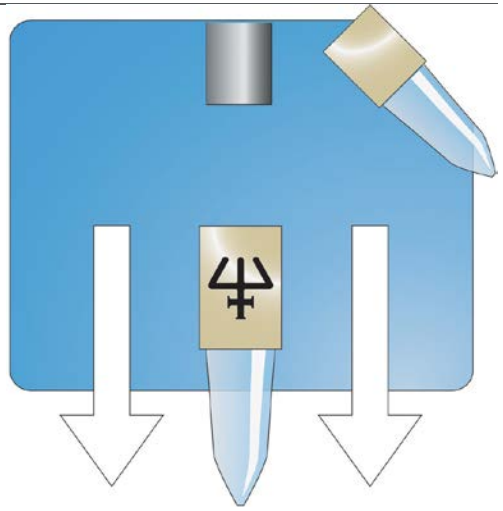
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	

Eject Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

EJECT TIPS - SEQUENCE OF STEPS

1 Move Z to top.
2 Move probe to well in Tip Waste Zone.
3 Eject tips by moving Z to Z Clamp Height.



Load Tips

This task loads tips. When running in Batch mode, create a method with this task ONLY.

For more information about the properties on each tab, see:

Load Tips - Instruments

Load Tips - Sequence of Steps

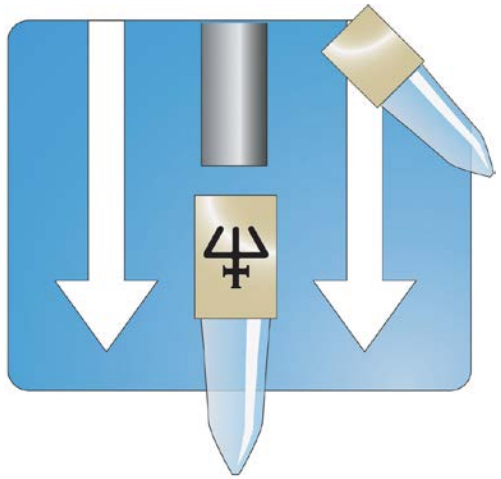
Load Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	

LOAD TIPS - SEQUENCE OF STEPS

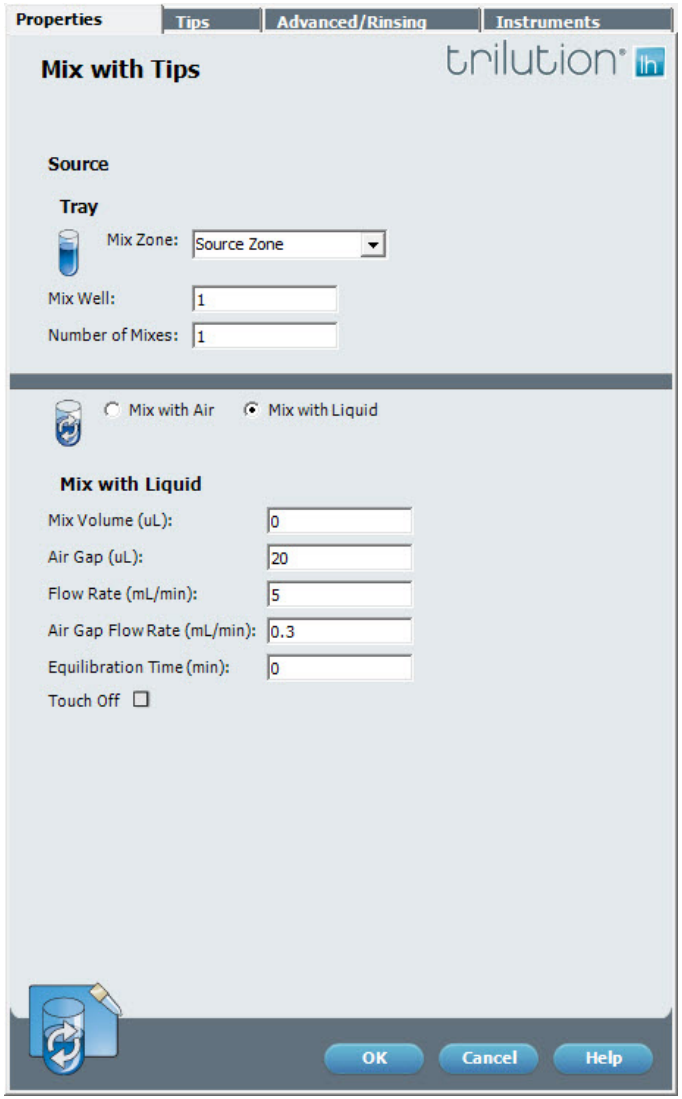
1 Move Z to top.
2 Load tips.

Note: If tips are already loaded, no tips will be installed.



Mix with Tips

This task aspirates air or liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, see:

Mix with Tips - Properties

Mix with Tips - Tips

Mix with Tips - Advanced/Rinsing

Mix with Tips - Instruments

Mix with Tips - Sequence of Steps

Mix with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Mix Zone	The zone in which the Mix Volume is mixed.	
Mix Well	The well in the Mix Zone in which the mix is performed. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Number of Mixes	Type the number of times the task should repeat the commands related to mixing.	1
Mix with Air/Mix with Liquid	Select Mix with Air or Mix with Liquid.	Mix with Liquid
Mix with Liquid Mix Volume	The quantity of liquid used as part of a mixing process.	0 µL
Mix with Liquid Air Gap	The quantity of an air gap.	20 µL
Mix with Liquid Flow Rate	The speed at which the Mixing Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Liquid Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Mix with Liquid Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Mix with Liquid Touch Off	Select Touch Off to activate the Side or Surface Touch Off within the Tips tab.	
Mix with Air Mix Volume	The quantity of air used as part of a mixing process	0 µL
Mix with Air Air Gap	The quantity of an air gap.	20 µL
Mix with Air Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Mix with Air Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min

Mix with Air Touch Off	Select Touch Off to activate the Side or Surface Touch Off within the Tips tab.	

Mix with Tips - Tips

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface touch off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the sample list and the well dimensions from the bed layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side touch off.	0 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no Rinse Touch Off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm

Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Mix with Tips - Advanced/Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	Active
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating. **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). **Auto Calculate**: Places the 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 Source Z Offset. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Auto Calculate
Source 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 Source Z Option when aspirating.	-2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing. **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). **Auto Calculate**: Places the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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).	Auto Calculate
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 when dispensing.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm

Mix with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

MIX WITH TIPS - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Load Tips (Optional)
2 Mix with Liquid
3 Mix with Air
4 Eject Tips (Optional)
5 Inside Rinse (Optional)
6 Outside Rinse (Optional)
7 Rinse Touch Off

Load Tips (Optional)

1 Move Z to top.
2 If Load Tips Before Task is selected, load tips.

Mix with Liquid

1 Move Z to top. 2 Aspirate Air Gap at Air Gap Flow Rate.
3 Move to Mix Well in Mix Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Aspirate Mix Volume at Flow Rate using Liquid Level Following, if selected.
6 Wait Equilibration Time.
7 Lower probe into well to Result Z Option and Result Z Offset.
8 Dispense Mix Volume at Flow Rate using Liquid Level Following, if selected.
9 Wait Equilibration Time.
10 Repeat steps 4–9 until Number of Mixes is complete.

11 If Touch Off is selected:

- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:

1) Move Z to top.

12 If Air Gap Volume>0:

1) Move probe to well in Inside Rinse Zone.
2) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3) Dispense Air Gap at Air Gap Flow Rate.

Mix with Air

1 Move Z to top. 2 Aspirate Air Gap at Flow Rate.
3 Move probe to Mix Well in Mix Zone.
4 Move Z to top.
5 Aspirate Mix Volume at Flow Rate.
6 Lower probe into well to Result Z Option and Result Z Offset.
7 Dispense Mix Volume at Flow Rate.
8 Wait Equilibration Time.
9 Repeat steps 4–8 until Number of Mixes completes.

10 If Touch Off is selected:

- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:

1) Move Z to top.

11 If Air Gap Volume>0:1) Move probe to well in Inside Rinse Zone.

2) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3) Dispense Air Gap at Flow Rate.

Eject Tips (Optional)

1 If Eject Tips After Task is selected:

a) Move Z to top.
b) Move probe to Tip Waste Zone.
c) Eject tips by moving Z to Z Clamp Height.

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

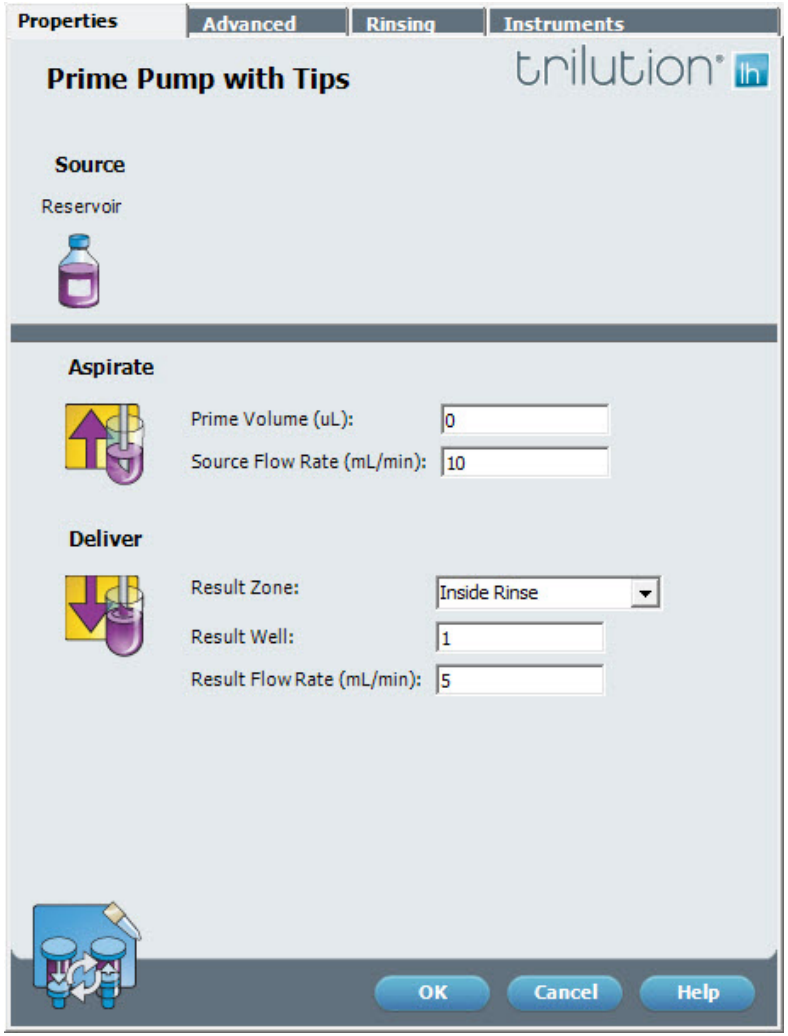
1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Prime Pump with Tips

This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.



For more information about the properties on each tab, see:

Prime Pump with Tips - Properties

Prime Pump with Tips - Advanced

Prime Pump with Tips - Rinsing

Prime Pump with Tips- Instruments

Prime Pump with Tips - Sequence of Steps

Prime Pump with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Source for the Prime Pump is reservoir.	Reservoir
Prime Volume	The quantity of liquid used for priming.	0 µL
Source Flow Rate	The speed at which the Prime Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Result Zone	The zone to which the Prime Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Prime Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Prime Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min

Prime Pump with Tips - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Z Option	One of six defined reference points, selected from a drop-down list, used when priming. **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). **Auto Calculate**: Places the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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 when priming.	8 mm

Prime Pump with Tips - Rinsing

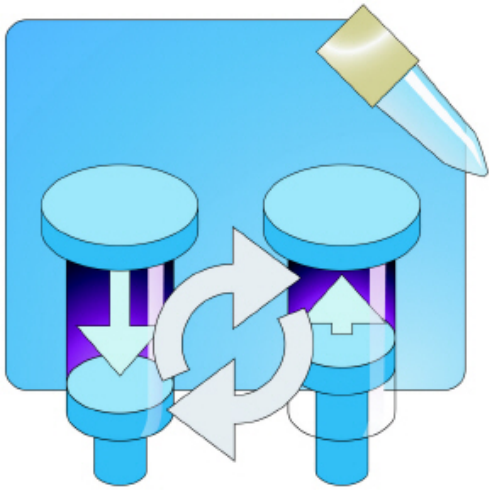
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Prime Pump with Tips- Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

PRIME PUMP WITH TIPS - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Aspirate
2 Inside Rinse (Optional)
3 Outside Rinse (Optional)
4 Rinse Touch Off

Aspirate

1 Move Z to top.
2 Move probe to Result Well in Result Zone.
3 Lower probe into well to Result Z Option and Result Z Offset.
4 Aspirate the Prime Volume (from Reservoir) at Source Flow Rate.
5 Dispense Prime Volume at Result Flow Rate.
6 Repeat steps 4–5 until Prime Volume delivered.
7 Move Z to top.

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

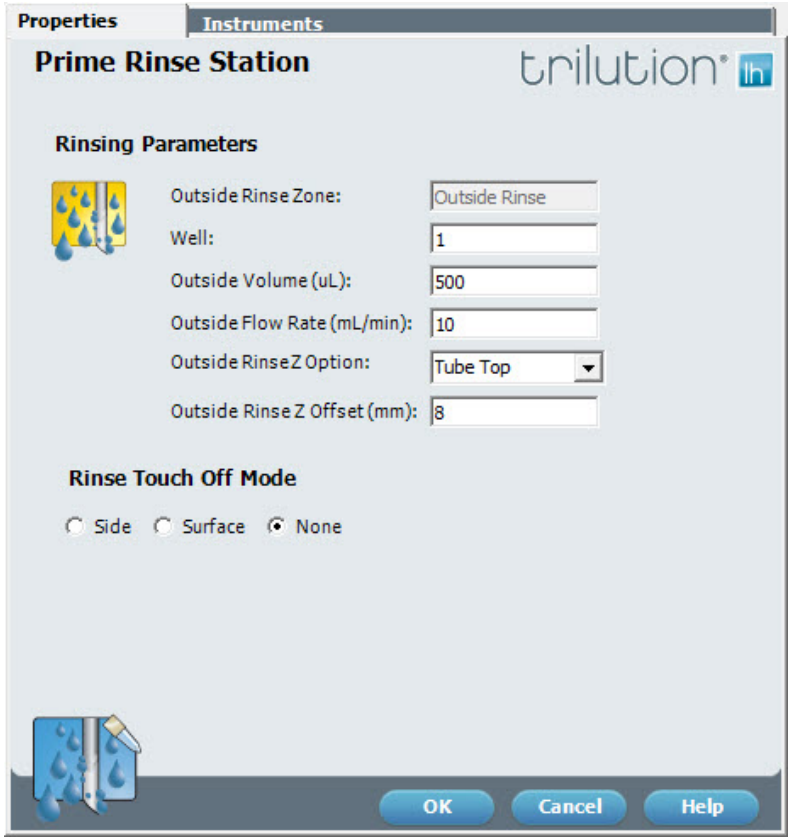
1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Prime Rinse Station

This task fills the outside rinse wells with liquid from the pump reservoir.



For more information about the properties on each tab, see:

Prime Rinse Station - Properties

Prime Rinse Station- Instruments

Prime Rinse Station - Sequence of Steps

Prime Rinse Station - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Well	The well in the Outside Rinse Zone to which the Outside Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Outside Volume	The quantity of liquid used to prime the outside rinse position in the rinse station.	500 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

	For a range of suggested flow rate values, see Flow Rates.	
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when priming the outside rinse position in the rinse station. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z-Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Prime Rinse Station- Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

PRIME RINSE STATION - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Prime
2 Rinse Touch Off

Prime

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

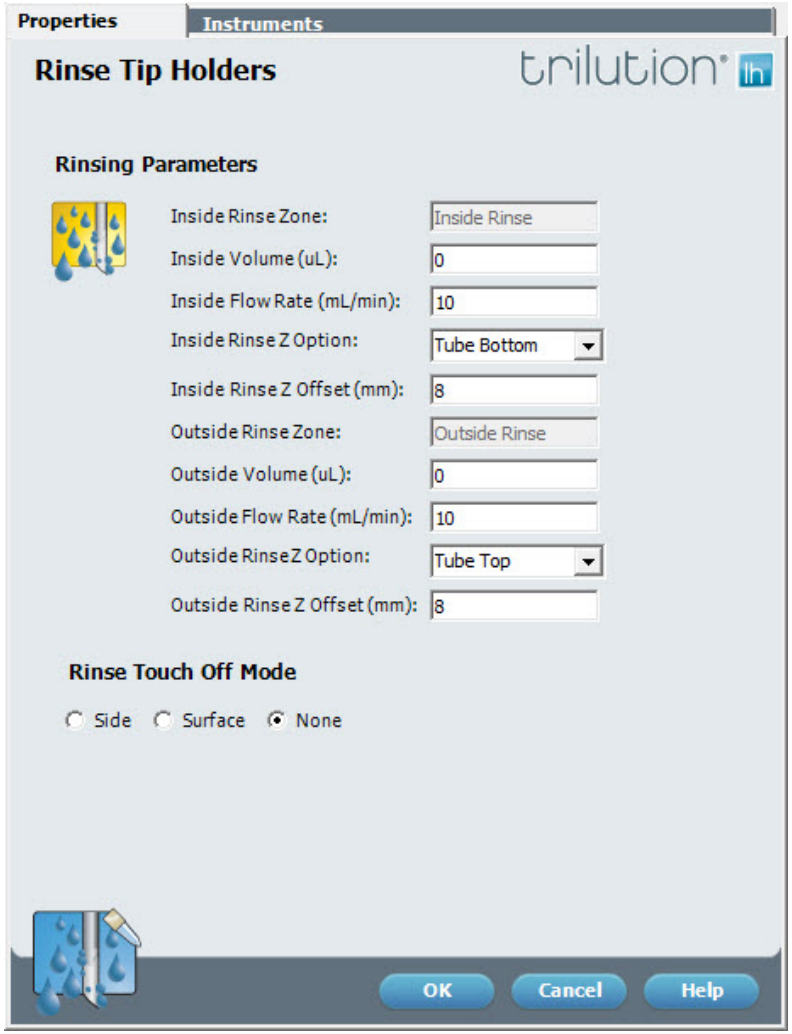
1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Rinse Tip Holders

This task rinses the inside and outside of the tip holders.



For more information about the properties on each tab, see:

Rinse Tip Holders - Properties

Rinse Tip Holders - Instruments

Rinse Tip Holders - Sequence of Steps

Rinse Tip Holders - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse

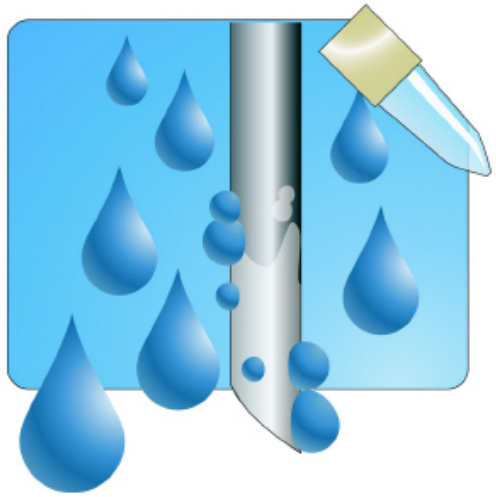
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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 Top

	Auto Calculate: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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).	
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no Rinse Touch Off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Rinse Tip Holders - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

RINSE TIP HOLDERS - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Inside Rinse (Optional)
2 Outside Rinse (Optional)
3 Rinse Touch Off

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

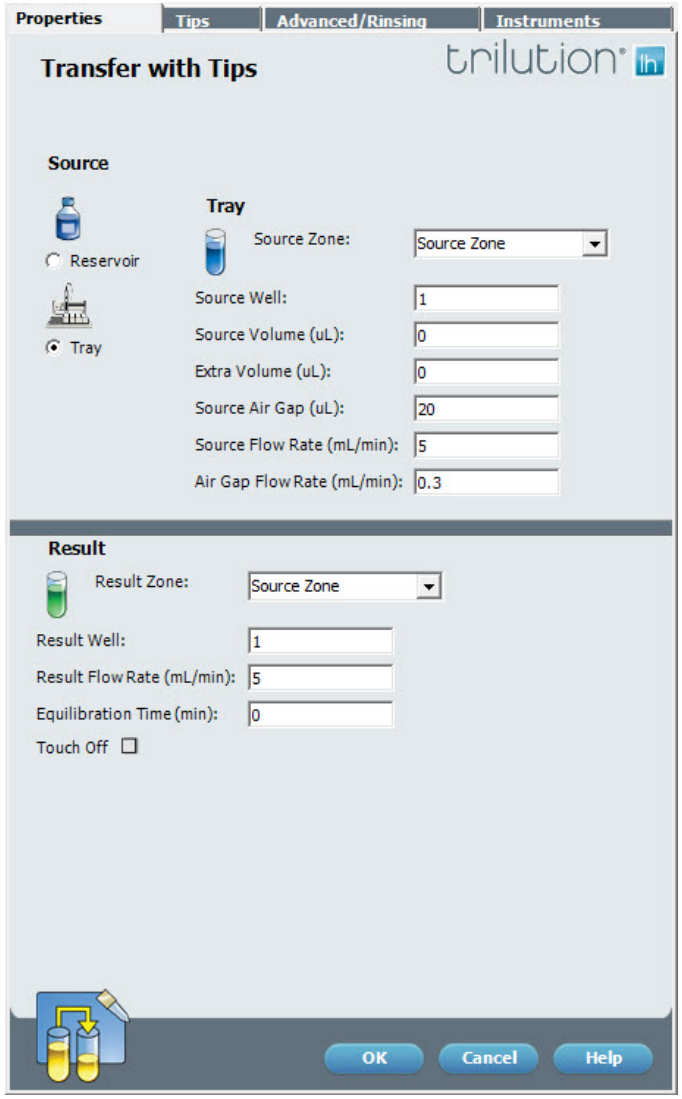
1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

Transfer with Tips

This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Transfer with Tips - Properties

Transfer with Tips - Tips

Transfer with Tips - Advanced/Rinsing

Transfer with Tips - Instruments

Transfer with Tips - Sequence of Steps

Transfer with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir or Tray.	Tray
Tray Source Zone	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	0.3 mL/min
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Result Zone	The zone to which the Source Volume is delivered.	

Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Transfer with Tips - Tips

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 µL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface touch off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the sample list and the well dimensions from the bed layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm

Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side touch off.	0 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no Rinse Touch Off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top to which the tip will move when performing a surface rinse touch off.	0 mm

Transfer with Tips - Advanced/Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Z Offset and Result Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	Active
Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. **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). **Auto Calculate**: Places the probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Auto Calculate
Source 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 Source Z Option when aspirating the Source Volume.	-2 mm

Result Z Option	One of six defined reference points, selected from a drop-down list, used when dispensing to the Result. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Result Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Result Z Offset value to move up from the bottom. **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).	Auto Calculate
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 when dispensing to the Result.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

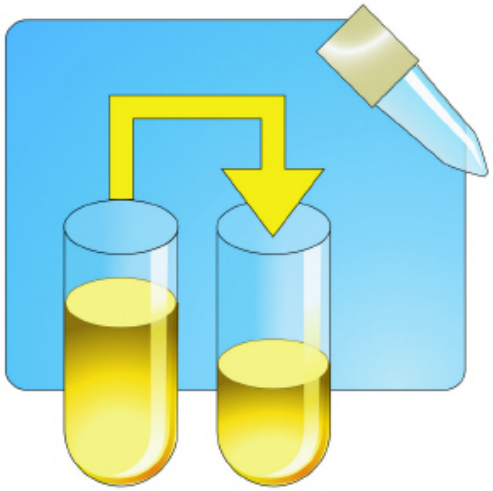
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 Top
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	8 mm

Transfer with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

TRANSFER WITH TIPS - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Load Tips (Optional)
2 Aspirate
3 Dispense
4 Eject Tips (Optional)
5 Inside Rinse (Optional)
6 Outside Rinse (Optional)
7 Rinse Touch Off

Load Tips (Optional)

1 Move Z to top.
2 If Load Tips Before Task is selected, load tips.

Aspirate

Reservoir

1 Move Z to top.
2 Move probe to Result Well in Result Zone.
3 Lower probe into well to Result Z Option and Result Z Offset.
4 Aspirate Source Volume (from Reservoir) at Source Flow Rate.

Tray (if Extra Volume=0)

1 Move Z to top. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (First Iteration only)
- If Prewet Tip is selected:
  1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
  2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
- If Prewet Tip is not selected:
  1) Skip to step 6.

6 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

Tray (if Extra Volume>0)

1 Move Z to top.
2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into well to Source Z Option and Source Z Offset.
5 Prewet Tip (First Iteration only)
   - If Prewet Tip is selected:
     1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected.
     2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected.
   - If Prewet Tip is not selected:
     1) Skip to step 6.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
7 Wait Equilibration Time.
8 Move Z to top.

Dispense

Reservoir

1 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
2 If Source Volume is greater than tip volume, repeat Aspirate (Reservoir) step 4 and Dispense (Reservoir) step 1 until Source Volume is delivered.
3 Wait Equilibration Time.
4 If Touch Off is selected:
   - If Side Touch Off:
     1) Move probe to Side Z Offset (Z Option is Tube Top).
     2) Move probe to edge of well.
     3) Move probe to Side X Offset.
     4) Move probe to center of well.
     5) Move Z to top.
   - If Surface Touch Off:
     1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
     2) Move Z to top.

   If Touch Off is not selected:
     1) Move Z to top.

Tray (if Extra Volume=0)

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Dispense Source Air Gap at Result Flow Rate.
5 Wait Equilibration Time.
6 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

7 If Source Volume is greater than tip volume, repeat Aspirate (Tray) and Dispense (Tray) until Source Volume is delivered.

Tray (If Extra Volume>0)

1 Move probe to Result Well in Result Zone.
2 Lower probe into well to Result Z Option and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected.
4 Wait Equilibration Time.

5 If Touch Off is selected:
- If Side Touch Off:
  1) Move probe to Side Z Offset (Z Option is Tube Top).
  2) Move probe to edge of well.
  3) Move probe to Side X Offset.
  4) Move probe to center of well.
  5) Move Z to top.
- If Surface Touch Off:
  1) Move probe to Surface Z Offset (Z Option is Auto Calculate).
  2) Move Z to top.

If Touch Off is not selected:
  1) Move Z to top.

6 If Source Volume is greater than tip volume, repeat Aspirate (Tray) (Air Gap and Extra Volume are not aspirated) and Dispense (Tray) until Source Volume is delivered.
7 Move probe to well in Inside Rinse Zone.
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate.

Eject Tips (Optional)

1 If Eject Tips After Task is selected:
  a) Move Z to top.
  b) Move probe to Tip Waste Zone.
  c) Eject tips by moving Z to Z Clamp Height.

Inside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate.
5 Dispense Inside Volume at Inside Flow Rate.
6 Repeat steps 4–5 until Inside Volume delivered.

Outside Rinse (Optional)

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Dispense Outside Volume at Outside Flow Rate.
6 Repeat steps 4–5 until Outside Volume delivered.

Rinse Touch Off

Side

1 Move Z to top.
2 Move probe to well in Inside Rinse Zone.
3 Move probe to Side Rinse Z Offset (Z Option is Tube Top).
4 Move probe 1.5 mm in the Y-direction (forward).
5 Move probe to Side Rinse Y Offset.
6 Move probe to the center of the well.
7 Move Z to top.

Surface

1 Move Z to top.
2 Move probe to well in Outside Rinse Zone.
3 Move probe to Surface Rinse Z Offset (Z Option is Tube Top).
4 Move Z to top.

None

1 Move Z to top.

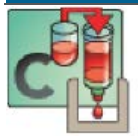
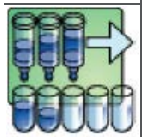
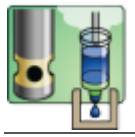
TASKS - SPE

Gilson supplies SPE tasks for use on the GX-241 II ASPEC without Pump , GX-271 ASPEC without Pump, and GX-274 ASPEC without Pump.

Additionally, when using Code 300-series racks, SPE tasks can be used on the following instruments:

- 215 Liquid Handler/215 Liquid Handler without Pump
- Quad-Z 215
- GX-281 Liquid Handler without Pump
- GX-271 Liquid Handler without Pump
- GX-274 Liquid Handler

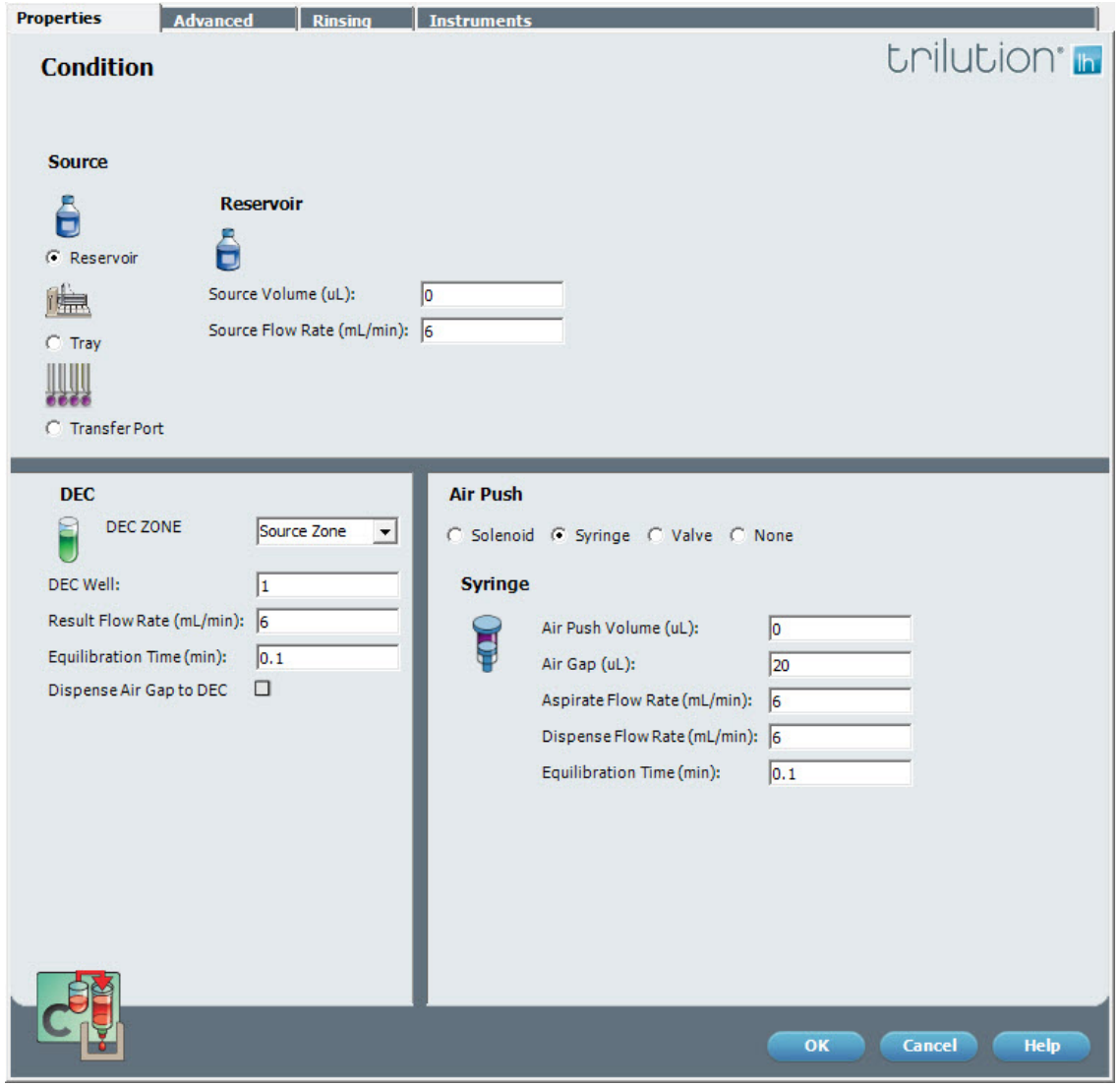
SPE Tasks

	GILSON TASK NAME AND DESCRIPTION
	Condition This task prepares the DEC to accept a prepared sample by aspirating then dispensing liquid (source) from the reservoir, tray, or transfer ports with the mobile rack positioned over the drain.
	Dry This task dries the DECs by pushing pressurized gas or air from the syringes through the DECs with the mobile rack positioned over the drain.
	Elute This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the DEC zone with the mobile rack over the collect position.
	Evaporate This task evaporates liquids in the collect wells by passing pressurized gas or air from the syringes into the wells with the mobile rack positioned over the drain.
	Fractionate If multiple analytes of interest will be collected, use this task to aspirate the specified volume from the reservoir, tray, or transfer ports and then dispense it to the DEC with the mobile rack positioned over the specified collect zone.
	GX-241 Solenoid Air Push This task performs an air push by passing pressurized gas through the DEC. The mobile rack can be positioned over the drain position or over the collect position. This task is for use with the GX-241 II ASPEC without Pump.

	Load If analytes of interest bind to the column, use this task to aspirate a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack positioned over the drain.
	Load and Collect If the contaminants bind to the column and the analytes of interest pass through the column into the collect zone, use this task to aspirate the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack over the collect position.
	Move Mobile Rack This task initializes the mobile rack or moves over the drain position or the collect position.
	Wash This task washes the DEC by aspirating a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispensing the volume to the wells of the DEC zone with the mobile rack positioned over the drain.

Condition

This task prepares the DEC to accept a prepared sample by aspirating then dispensing liquid (source) from the reservoir, tray, or transfer ports with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

[Condition - Properties]

[Condition - Advanced]

[Condition - Rinsing]

[Condition - Instruments]

[Condition - Sequence of Steps]

Condition - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Tray Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Transfer Port Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Equilibration Time	The time the program waits after each dispense before moving out of the well.	0.1 min
Dispense Air Gap to DEC	If selected, the Air Gap is dispensed to the DEC after the Source Volume has been delivered (if Extra Volume=0). If not selected (or if Extra Volume>0), the Air Gap is dispensed to the Inside Rinse Zone after the Source Volume has been delivered.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe
Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL

Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1
Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min

Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Condition - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	Defined reference point used when dispensing to the DEC. **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.	Tube Top
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 when dispensing to the DEC.	-18 mm
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

Condition - Rinsing

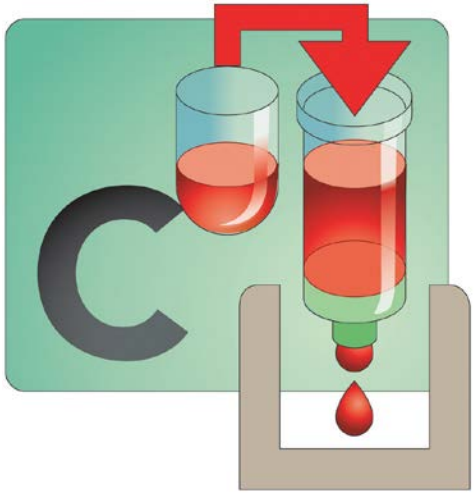
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Condition - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

CONDITION - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Aspirate
3 Dispense
4 Air Push
5 Inside Rinse
6 Outside Rinse

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
5 Dispense Source Volume (from Reservoir) at Result Flow Rate.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 If Source Volume is greater than syringe volume, repeat steps 2–7 until Source Volume delivered.

Tray

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into Source Well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Aspirate Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Tray

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Transfer Port

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.

8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Air Push

None

Skips air push.

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height. 2 Move probe to DEC Well in DEC Zone.
3 Aspirate Air Gap at Aspirate Flow Rate.
4 Move probe to DEC Well in DEC Zone.
5 Aspirate Air Push Volume at Aspirate Flow Rate.
6 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
7 Dispense Air Push Volume at Dispense Flow Rate.
8 Wait Equilibration Time.
9 Move Z to Z Safe Height.
10 Repeat steps 4–9 until Air Push Volume is dispensed.
11 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0:

1 If Air Push is None and Source is Reservoir:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Volume at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume is greater than syringe volume, repeat steps 2–3 until Inside Volume delivered.
4 Move Z to Z Safe Height.

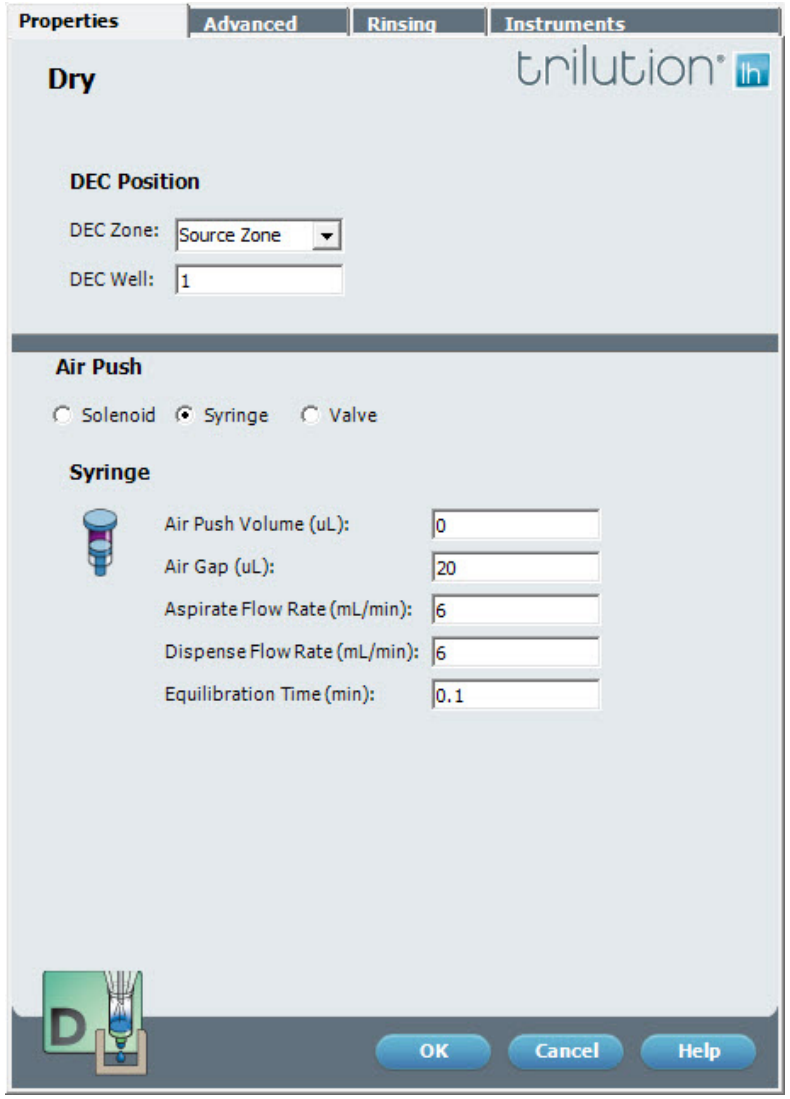
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Dry

This task dries the DECs by pushing pressurized gas or air from the syringes through the DECs with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Dry - Properties

Dry - Advanced

Dry - Rinsing

Dry - Instruments

Dry - Sequence of Steps

Dry - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
DEC Zone	The zone to which the air push is performed.	
DEC Well	The well in the DEC Zone where the air push is performed. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe
Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1

Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Dry - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

Dry - Rinsing

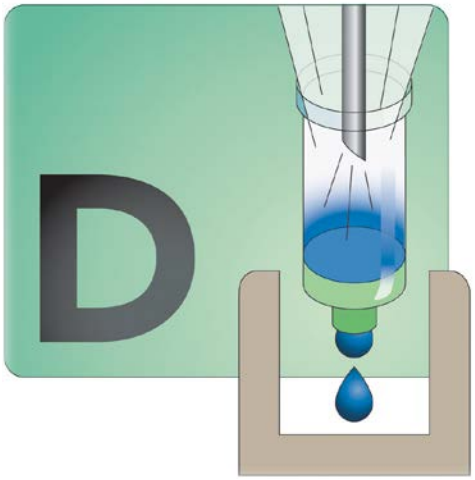
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Dry - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DRY - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Air Push
3 Inside Rinse
4 Outside Rinse

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Air Push

Solenoid

1 Move Z to Z Safe Height.
2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Aspirate Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Aspirate Air Push Volume at Aspirate Flow Rate.
5 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
6 Dispense Air Push Volume at Dispense Flow Rate.
7 Wait Equilibration Time.
8 Move Z to Z Safe Height.
9 Repeat steps 3–8 until Air Push Volume is dispensed.
10 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0

1 If Air Push is Syringe and Air Gap=0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume>Syringe Volume, repeat steps 1–2 until Inside Volume is delivered.
4 Move Z to Z Safe Height.

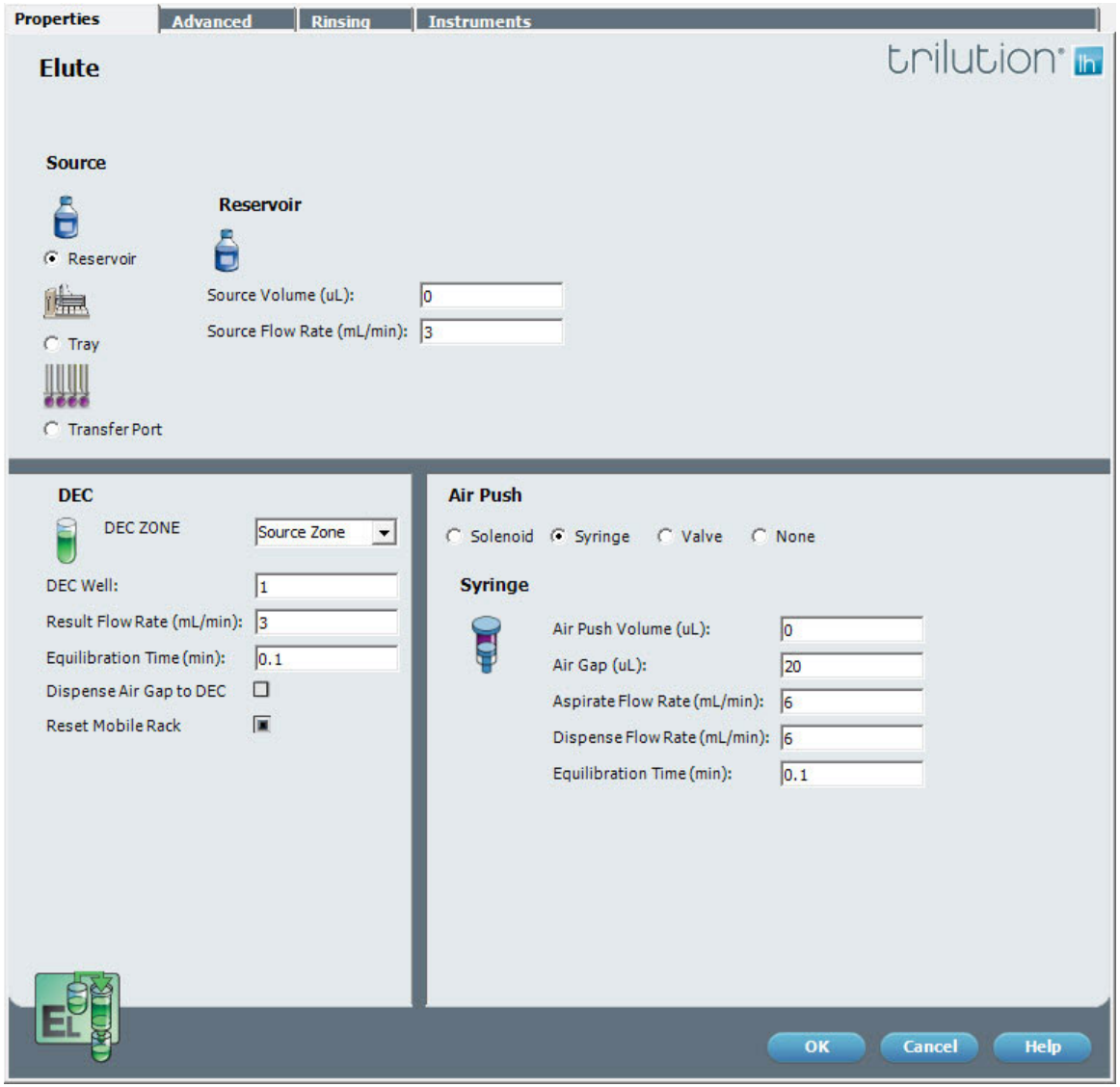
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Elute

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the DEC zone with the mobile rack over the collect position.



For more information about the properties on each tab, see:

[Elute - Properties]

[Elute - Advanced]

[Elute - Rinsing]

[Elute - Instruments]

[Elute - Sequence of Steps]

Elute - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Tray Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Transfer Port Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Equilibration Time	The time the program waits after each dispense before moving out of the well.	0.1 min
Dispense Air Gap to DEC	If selected, the Air Gap is dispensed to the DEC after the Source Volume has been delivered (if Extra Volume=0). If not selected (or if Extra Volume>0), the Air Gap is dispensed to the Inside Rinse Zone after the Source Volume has been delivered.	
Reset Mobile Rack	When selected, moves the mobile rack over the drain.	Selected
Air Push	Select Solenoid, Syringe, Valve, or None. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe

Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1
Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min

Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Elute - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	Defined reference point used when dispensing to the DEC. **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.	Tube Top
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 when dispensing to the DEC.	-18 mm
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

Elute - Rinsing

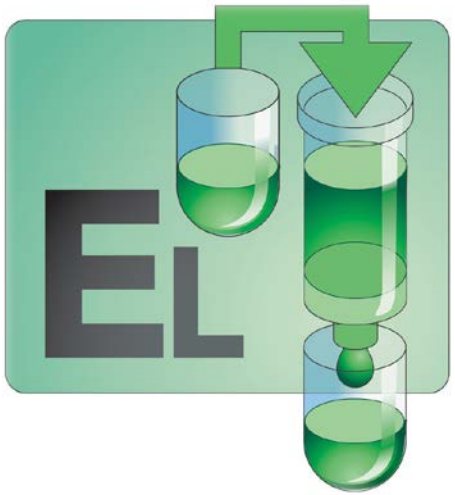
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Elute - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

ELUTE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Aspirate
3 Dispense
4 Air Push
5 Inside Rinse
6 Outside Rinse
7 Move Mobile Rack (Optional)

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the collect position.

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
5 Dispense Source Volume (from Reservoir) at Result Flow Rate.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 If Source Volume is greater than syringe volume, repeat steps 2–7 until Source Volume delivered.

Tray

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into Source Well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Aspirate Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Tray

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Transfer Port

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:

a) Move probe to well in Inside Rinse Zone.
b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Air Push

None

Skips air push.

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height. 2 Move probe to DEC Well in DEC Zone.
3 Aspirate Air Gap at Aspirate Flow Rate.
4 Move probe to DEC Well in DEC Zone.
5 Aspirate Air Push Volume at Aspirate Flow Rate.
6 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
7 Dispense Air Push Volume at Dispense Flow Rate.
8 Wait Equilibration Time.
9 Move Z to Z Safe Height.
10 Repeat steps 4–9 until Air Push Volume is dispensed.

11 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0:

1 If Air Push is None and Source is Reservoir:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Volume at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume is greater than syringe volume, repeat steps 2–3 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

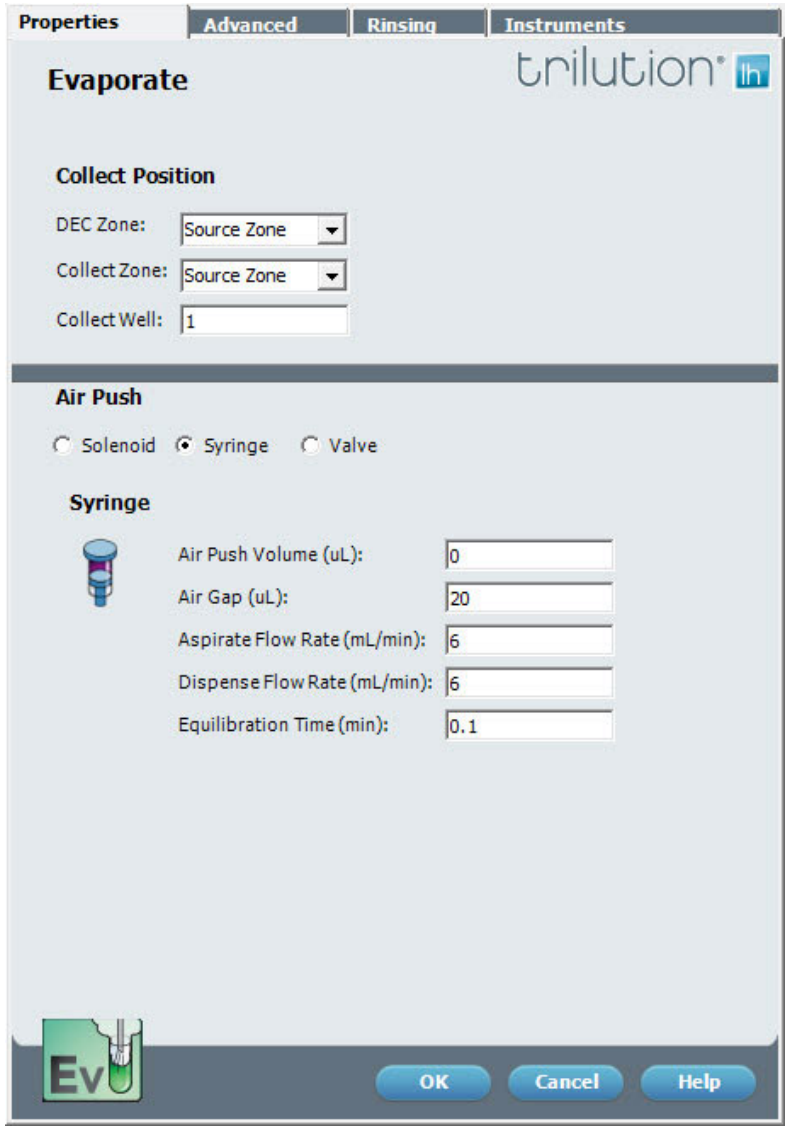
Move Mobile Rack (Optional)

If Reset Mobile Rack is selected:

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Evaporate

This task evaporates liquids in the collect wells by passing pressurized gas or air from the syringes into the wells with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Evaporate - Properties
Evaporate - Advanced
Evaporate - Rinsing
Evaporate - Instruments

Evaporate - Sequence of Steps

Evaporate - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
DEC Zone	The zone of the mobile rack on the rack in which evaporation will occur.	
Collect Zone	The zone where the evaporation will occur.	
Collect Well	The well where the evaporation will occur. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe
Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1

Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Evaporate - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Air Push Z Option	Defined reference point used when dispensing to the Collect Zone. **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 Air Push Z Offset.	Tube Top

Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the Collect Zone.	-2mm

Evaporate - Rinsing

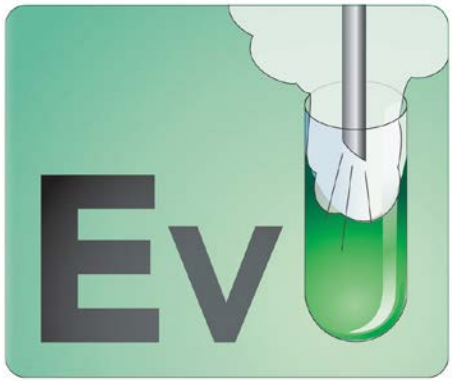
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL

Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Evaporate - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

EVAPORATE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Air Push
3 Inside Rinse
4 Outside Rinse

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Air Push

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to Collect Well in Collect Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height.
2 Aspirate Air Gap at Aspirate Flow Rate.
3 Move probe to Collect Well in Collect Zone.
4 Aspirate Air Push Volume at Aspirate Flow Rate.
5 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
6 Dispense Air Push Volume at Dispense Flow Rate.
7 Wait Equilibration Time.
8 Move Z to Z Safe Height.
9 Repeat steps 3–8 until Air Push Volume is dispensed.
10 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to Collect Well in Collect Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0

1 If Air Push is Syringe and Air Gap=0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume>Syringe Volume, repeat steps 1–2 until Inside Volume is delivered.
4 Move Z to Z Safe Height.

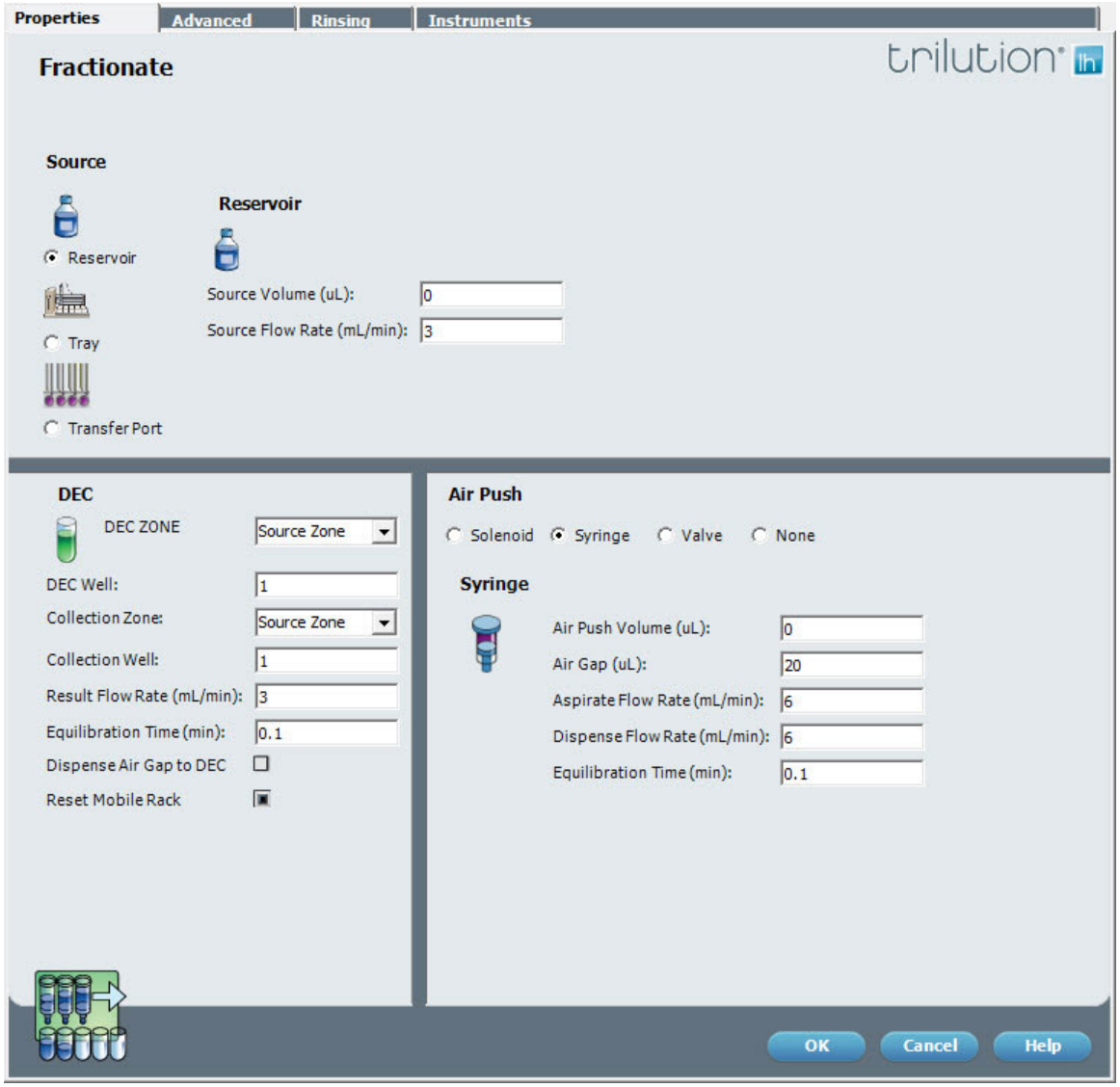
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Fractionate

If multiple analytes of interest will be collected, use this task to aspirate the specified volume from the reservoir, tray, or transfer ports and then dispense it to the DEC with the mobile rack positioned over the specified collect zone.



For more information about the properties on each tab, see:

[Fractionate - Properties]

[Fractionate - Advanced]

[Fractionate - Rinsing]

[Fractionate - Instruments]

[Fractionate - Sequence of Steps]

Fractionate - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Tray Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Transfer Port Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Collection Zone	The zone where the analytes of interest will be collected.	
Collection Well	The well where the analyte of interest will be collected. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Equilibration Time	The time the program waits after each dispense before moving out of the well.	0.1 min
Dispense Air Gap to DEC	If selected, the Air Gap is dispensed to the DEC after the Source Volume has been delivered (if Extra Volume=0). If not selected (or if Extra Volume>0), the Air Gap is dispensed to the Inside Rinse Zone after the Source Volume has been delivered.	
Reset Mobile Rack	When selected, moves the mobile rack over the drain.	Selected

Air Push	Select Solenoid, Syringe, Valve, or None. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe
Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1
Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min

Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Fractionate - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	Defined reference point used when dispensing to the DEC. **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.	Tube Top
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 when dispensing to the DEC.	-18 mm
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

Fractionate - Rinsing

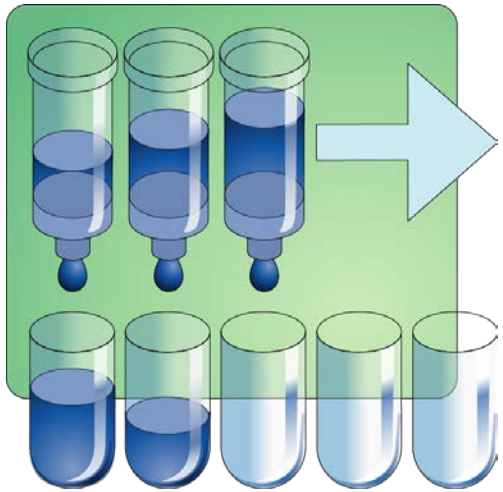
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Fractionate - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

FRACTIONATE - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Aspirate
3 Dispense
4 Air Push
5 Inside Rinse
6 Outside Rinse
7 Move Mobile Rack

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the collect position.

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
5 Dispense Source Volume (from Reservoir) at Result Flow Rate.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 If Source Volume is greater than syringe volume, repeat steps 2–7 until Source Volume delivered.

Tray

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into Source Well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Aspirate Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Tray or Transfer Port

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Air Push

None

Skips air push.

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height. 2 Move probe to DEC Well in DEC Zone.
3 Aspirate Air Gap at Aspirate Flow Rate.
4 Move probe to DEC Well in DEC Zone.
5 Aspirate Air Push Volume at Aspirate Flow Rate.
6 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
7 Dispense Air Push Volume at Dispense Flow Rate.
8 Wait Equilibration Time.
9 Move Z to Z Safe Height.
10 Repeat steps 4–9 until Air Push Volume is dispensed.
11 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0:

1 If Air Push is None and Source is Reservoir:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Volume at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume is greater than syringe volume, repeat steps 2–3 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

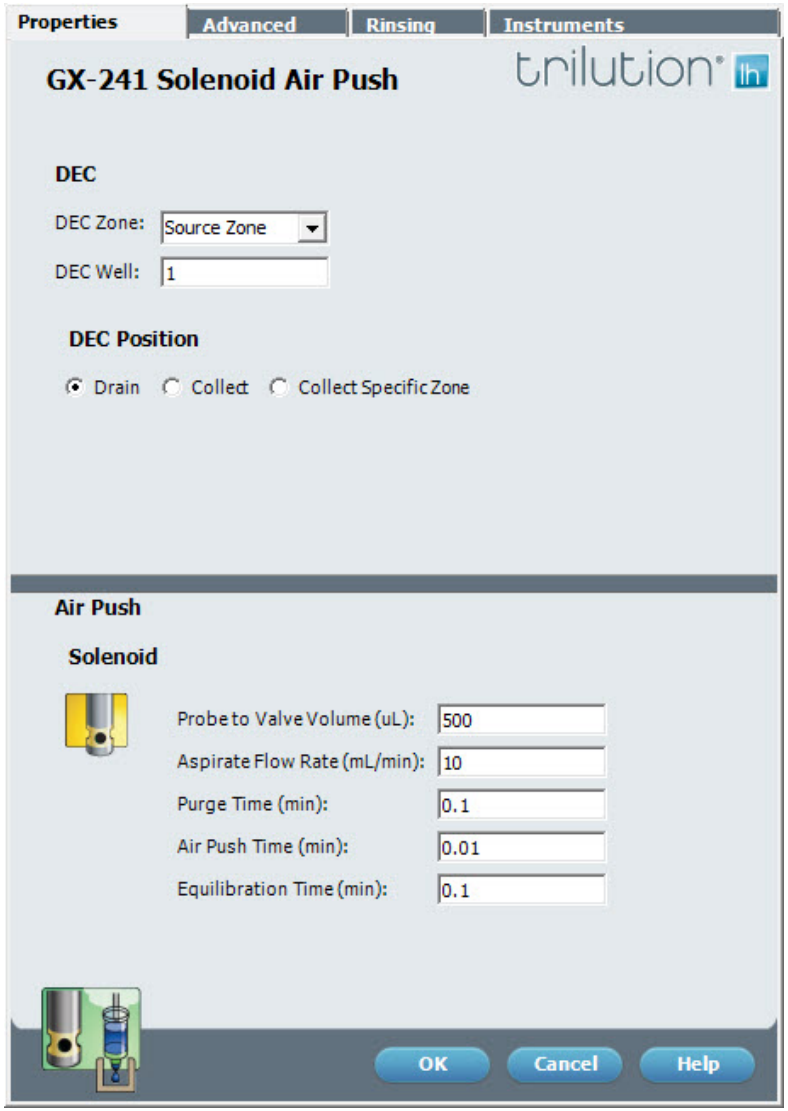
Move Mobile Rack

If Reset Mobile Rack is selected:

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

GX-241 Solenoid Air Push

This task performs an air push by passing pressurized gas through the DEC. The mobile rack can be positioned over the drain position or over the collect position. This task is for use with the GX-241 II ASPEC without Pump.



For more information about the properties on each tab, see:

GX-241 Solenoid Air Push - Properties

GX-241 Solenoid Air Push - Advanced

GX-241 Solenoid Air Push - Rinsing

GX-241 Solenoid Air Push - Instruments

GX-241 Solenoid Air Push - Sequence of Steps

GX-241 Solenoid Air Push - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT
DEC Zone	The zone in which the air push is performed.	
DEC Well	The well in the DEC Zone in which the air push is performed.	1
DEC Position	The position of the mobile rack when performing the air push. Select Drain, Collect, or Collect Specific Zone.	Drain
DEC Position - Collect Reset Mobile Rack	When selected, moves the mobile rack over the drain position after completing the air push.	Selected
DEC Position - Collect Specific Zone Collection Zone	The zone to which the air push is performed.	Collect
DEC Position - Collect Specific Zone Collection Well	The well to which air push is performed.	1
DEC Position - Collect Specific Zone Reset Mobile Rack	When selected, moves the mobile rack over the drain position after completing the air push.	Selected
Air Push - Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	500 µL
Air Push - Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Air Push - Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.01 min
Air Push - Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Air Push - Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min

GX-241 Solenoid Air Push - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

GX-241 Solenoid Air Push - Rinsing

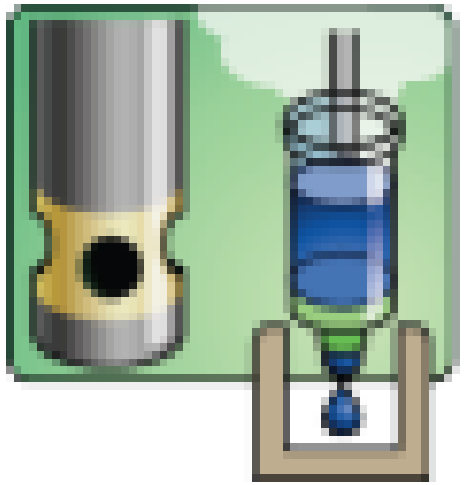
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

GX-241 Solenoid Air Push - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

GX-241 SOLENOID AIR PUSH - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Air Push
3 Inside Rinse
4 Outside Rinse

Move Mobile Rack

Drain

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Collect

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the collect position.

Collect Specific Zone

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the specified collect position and align the DEC well with the selected Collection Zone and Collection Well.

Air Push

Solenoid

1 Move Z to Z Safe Height.
2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Turn on GX-241 FC Valve.
6 Wait Purge Time.
7 Turn off GX-241 FC Valve.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Turn off GX-241 FC Valve.
12 Wait Equilibration Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0

1 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate.
2 Dispense Inside Volume at Inside Flow Rate. If Inside Volume>Syringe Volume, repeat steps 1–2 until Inside Volume is delivered.
3 Move Z to Z Safe Height.

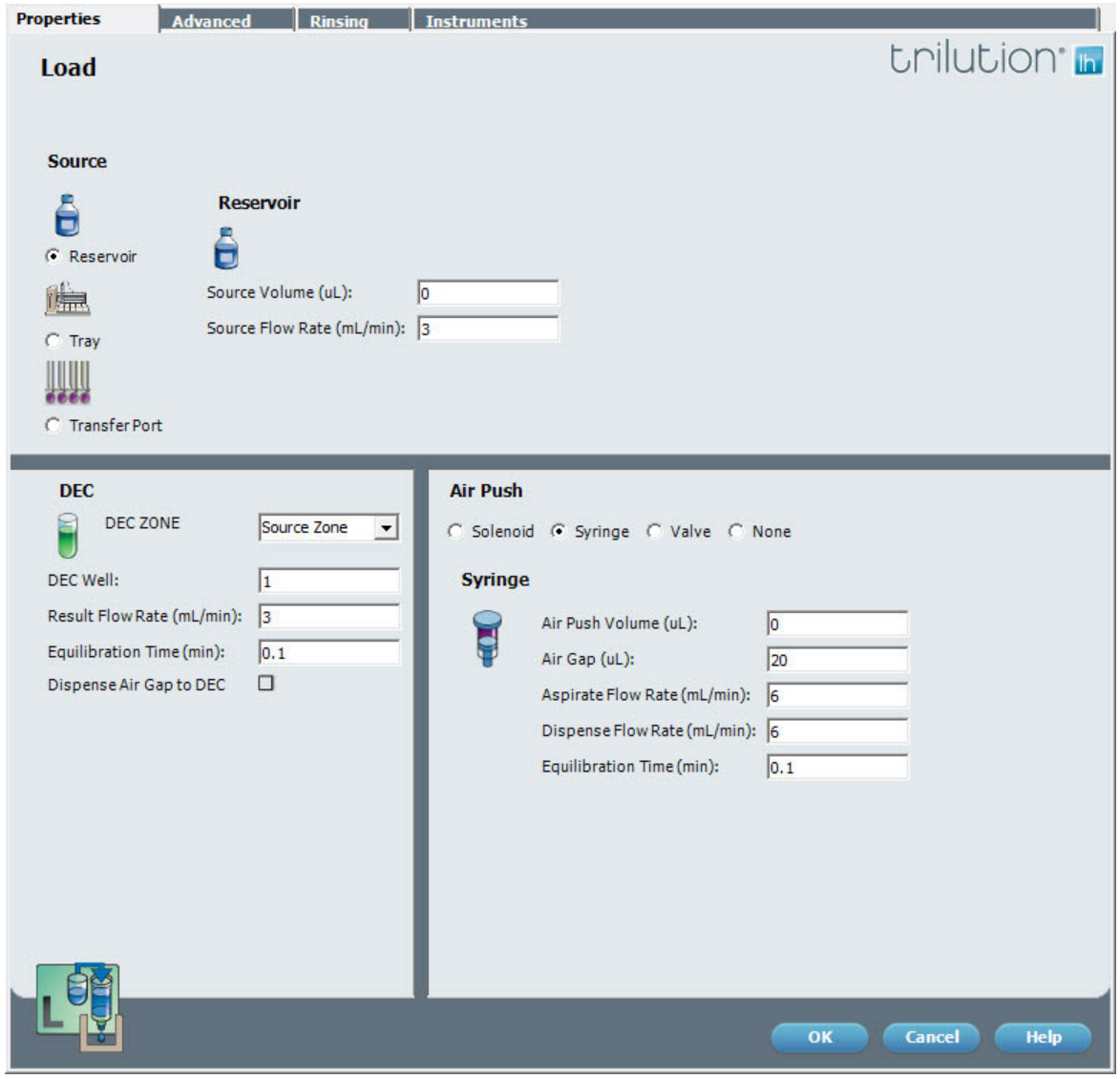
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Load

If analytes of interest bind to the column, use this task to aspirate a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

[Load - Properties]

[Load - Advanced]

[Load - Rinsing]

[Load - Instruments]

[Load - Sequence of Steps]

Load - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Tray Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Transfer Port Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Equilibration Time	The time the program waits after each dispense before moving out of the well.	0.1 min
Dispense Air Gap to DEC	If selected, the Air Gap is dispensed to the DEC after the Source Volume has been delivered (if Extra Volume=0). If not selected (or if Extra Volume>0), the Air Gap is dispensed to the Inside Rinse Zone after the Source Volume has been delivered.	
Air Push	Select Solenoid, Syringe, Valve, or None. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe
Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL

Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1
Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min

Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Load - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	Defined reference point used when dispensing to the DEC. **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.	Tube Top
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 when dispensing to the DEC.	-18 mm
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

Load - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse

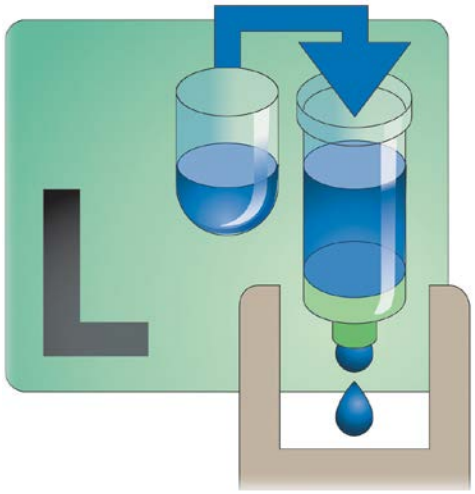
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Load - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

LOAD - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Aspirate
3 Dispense
4 Air Push
5 Inside Rinse
6 Outside Rinse

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
5 Dispense Source Volume (from Reservoir) at Result Flow Rate.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 If Source Volume is greater than syringe volume, repeat steps 2–7 until Source Volume delivered.

Tray

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into Source Well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Aspirate Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Tray or Transfer Port

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Air Push

None

Skips air push.

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height. 2 Move probe to DEC Well in DEC Zone.
3 Aspirate Air Gap at Aspirate Flow Rate.
4 Move probe to DEC Well in DEC Zone.
5 Aspirate Air Push Volume at Aspirate Flow Rate.
6 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
7 Dispense Air Push Volume at Dispense Flow Rate.
8 Wait Equilibration Time.
9 Move Z to Z Safe Height.
10 Repeat steps 4–9 until Air Push Volume is dispensed.
11 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0:

1 If Air Push is None and Source is Reservoir:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Volume at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume is greater than syringe volume, repeat steps 2–3 until Inside Volume delivered.
4 Move Z to Z Safe Height.

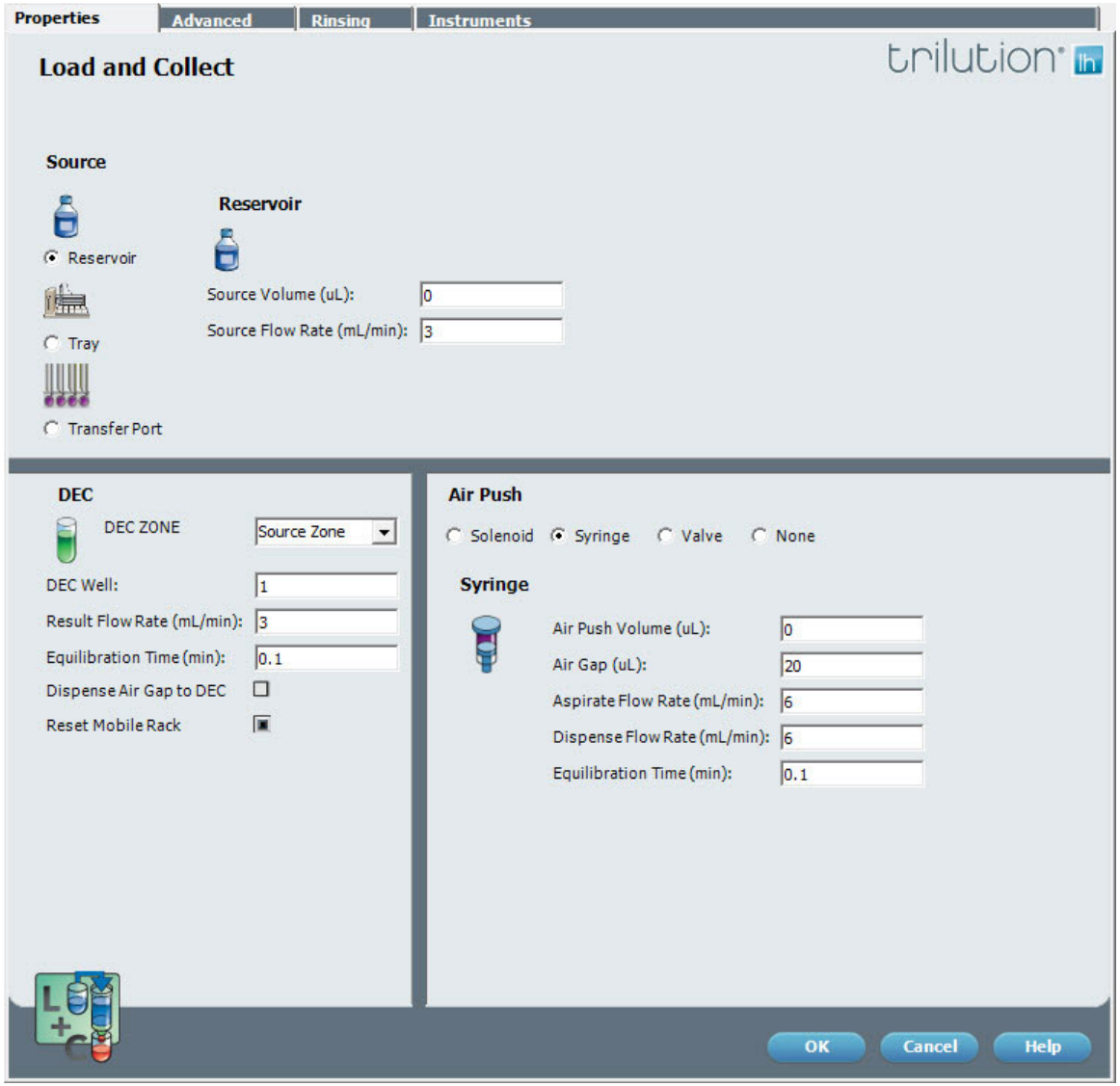
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Load and Collect

If the contaminants bind to the column and the analytes of interest pass through the column into the collect zone, use this task to aspirate the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack over the collect position.



For more information about the properties on each tab, see:

Load and Collect - Properties

Load and Collect - Advanced

Load and Collect - Rinsing

Load and Collect - Instruments

Load and Collect - Sequence of Steps

Load and Collect - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Tray Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Transfer Port Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	3 mL/min
Equilibration Time	The time the program waits after each dispense before moving out of the well.	0.1 min
Dispense Air Gap to DEC	If selected, the Air Gap is dispensed to the DEC after the Source Volume has been delivered (if Extra Volume=0). If not selected (or if Extra Volume>0), the Air Gap is dispensed to the Inside Rinse Zone after the Source Volume has been delivered.	
Reset Mobile Rack	When selected, moves the mobile rack over the drain.	Selected
Air Push	Select Solenoid, Syringe, Valve, or None. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe

Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1
Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min

Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Load and Collect - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Z Offset to the liquid surface. Initial Volumes should be set in the sample list when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	Defined reference point used when dispensing to the DEC. **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.	Tube Top
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 when dispensing to the DEC.	-18 mm
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

Load and Collect - Rinsing

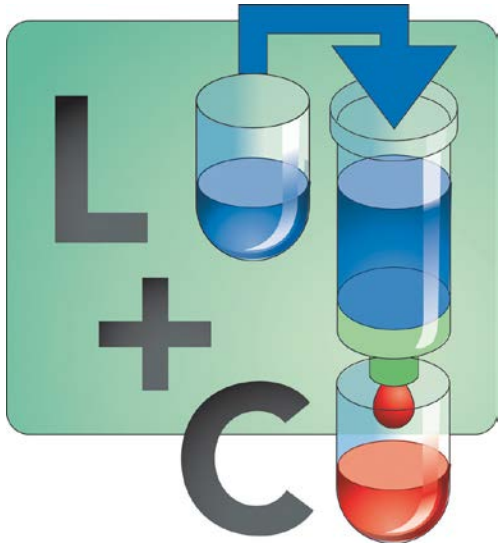
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Load and Collect - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

LOAD AND COLLECT - SEQUENCE OF STEPS



The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Aspirate
3 Dispense
4 Air Push
5 Inside Rinse
6 Outside Rinse

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the collect position.

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
5 Dispense Source Volume (from Reservoir) at Result Flow Rate.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 If Source Volume is greater than syringe volume, repeat steps 2–7 until Source Volume delivered.

Tray

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into Source Well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Aspirate Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Tray or Transfer Port

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Air Push

None

Skips air push.

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height. 2 Move probe to DEC Well in DEC Zone.
3 Aspirate Air Gap at Aspirate Flow Rate.
4 Move probe to DEC Well in DEC Zone.
5 Aspirate Air Push Volume at Aspirate Flow Rate.
6 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
7 Dispense Air Push Volume at Dispense Flow Rate.
8 Wait Equilibration Time.
9 Move Z to Z Safe Height.
10 Repeat steps 4–9 until Air Push Volume is dispensed.
11 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0:

1 If Air Push is None and Source is Reservoir:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Volume at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume is greater than syringe volume, repeat steps 2–3 until Inside Volume delivered.
4 Move Z to Z Safe Height.

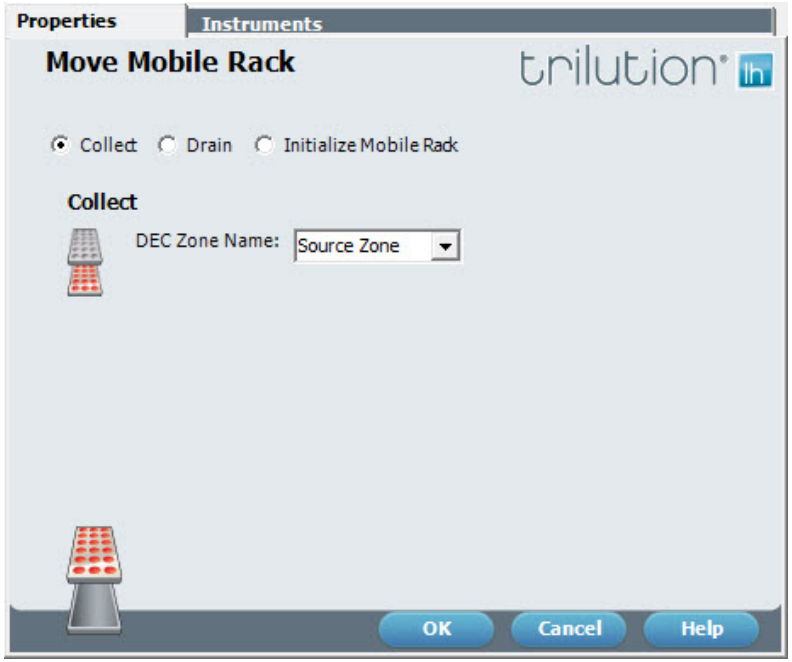
Outside Rinse

If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

Move Mobile Rack

This task initializes the mobile rack or moves over the drain position or the collect position.



For more information about the properties on each tab, see:

Move Mobile Rack - Properties

Move Mobile Rack - Instruments

Move Mobile Rack - Sequence of Steps

Move Mobile Rack - Properties

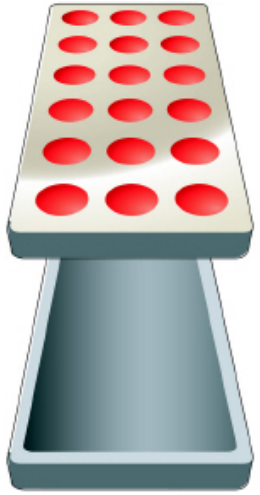
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Collect/Drain/Initialize Mobile Rack	Select where to move mobile rack (Collect, Drain, or Initialize Mobile Rack).	Collect
DEC Zone Name	The mobile rack zone name.	

Move Mobile Rack - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	

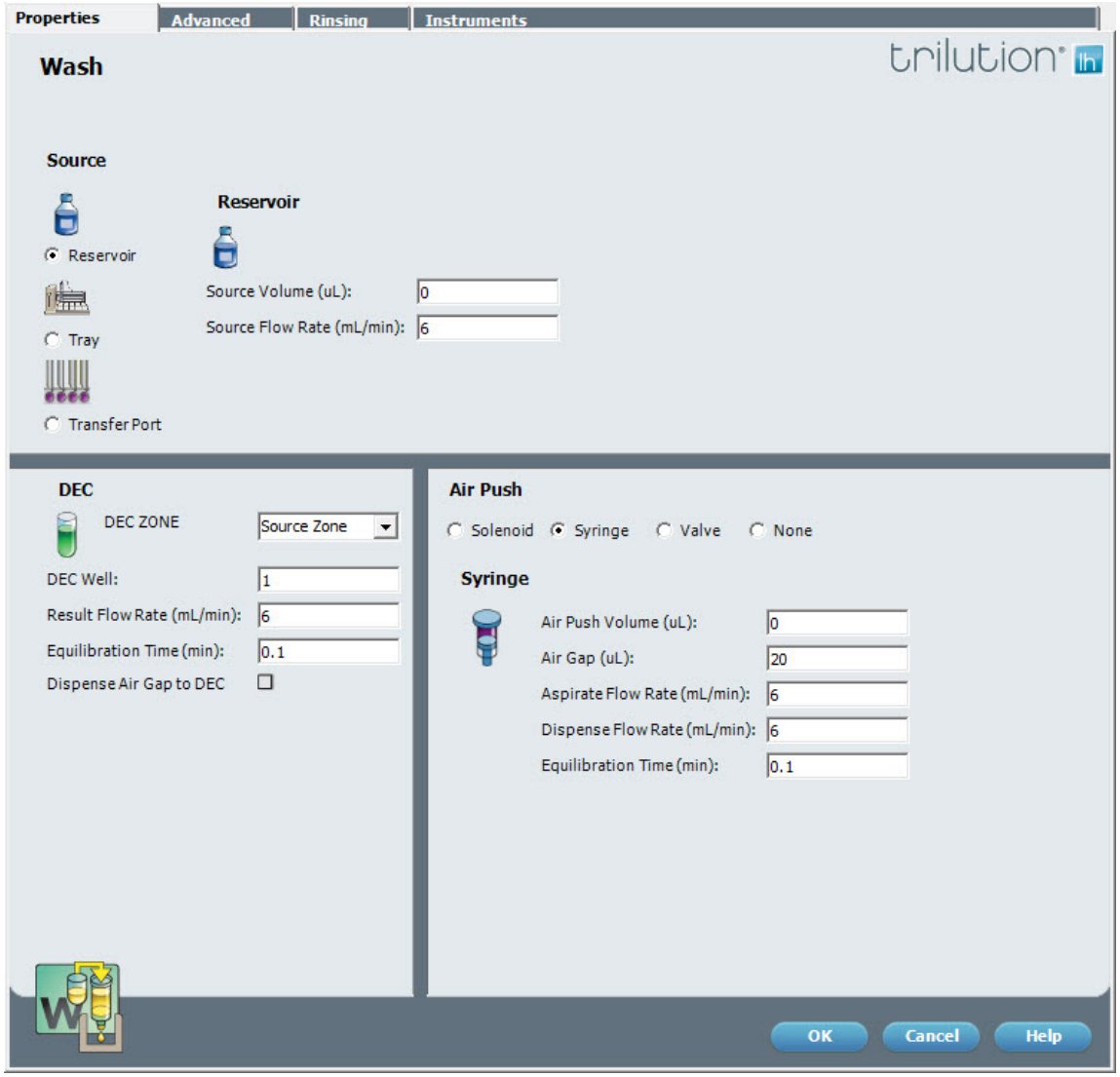
MOVE MOBILE RACK - SEQUENCE OF STEPS

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the collect or drain position or initialize the mobile rack.
3 Move Z to Z Safe Height.



Wash

This task washes the DEC by aspirating a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispensing the volume to the wells of the DEC zone with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

[Wash - Properties]

[Wash - Advanced]

[Wash - Rinsing]

[Wash - Instruments]

[Wash - Sequence of Steps]

Wash - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 µL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Tray Source Volume	The quantity of a sample.	0 µL
Tray Extra Volume	An additional volume to the Source 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
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Tray Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port Source Volume	The quantity of a sample.	0 µL
Transfer Port Extra Volume	An additional volume to the Source 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 Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 µL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see Flow Rates.	1 mL/min
Transfer Port Aspirate Equilibration Time	The time the program waits before moving out of the well after aspirating the Source Volume.	0 min
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Equilibration Time	The time the program waits after each dispense before moving out of the well.	0.1 min
Dispense Air Gap to DEC	If selected, the Air Gap is dispensed to the DEC after the Source Volume has been delivered (if Extra Volume=0). If not selected (or if Extra Volume>0), the Air Gap is dispensed to the Inside Rinse Zone after the Source Volume has been delivered.	
Air Push	Select Solenoid, Syringe, Valve, or None. Solenoid option available for GX-27X or GX-281 FC Valve or for valve controlled via contacts. Valve option only valid for the GX-271/274 ASPEC.	Syringe
Solenoid Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL

Solenoid Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Solenoid Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Solenoid Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Solenoid Equilibration Time	The time the program waits before moving out of the well after a solenoid air push.	0.1 min
Solenoid GX-27X or GX-281 FC Valve	Select this option to perform the air push using a GX-27X or GX-281 FC Valve.	
Solenoid Contact Control	Select this option to perform the air push using a valve controlled via contacts.	
Solenoid Contact Control - Contact	The output contact used to control the valve for the air push.	1
Solenoid Contact Control - 24V Contact	The 24V contact used to control the valve for the air push.	1
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 µL
Syringe Air Gap	The quantity of an air gap.	20 µL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	6 mL/min
Syringe Equilibration Time	The time the program waits before moving out of the well after a syringe air push.	0.1 min

Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume.	4100 µL
Valve Aspirate Flow Rate	The speed at which the Probe to Valve Volume moves into and out of the probe. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Valve Purge Time	The length of time the air is dispensed from the valve to purge the tubing.	0.05 min
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	The time the program waits before moving out of the well after a valve air push.	0.1 min

Wash - Advanced

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Z Offset to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Z Offset to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	1

Source Z Option	One of six defined reference points, selected from a drop-down list, used when aspirating from the Source. If Liquid Level Following is selected, the Z Option Auto Calculate is automatically used. If Liquid Level Detection is selected, the Z Option Z Adjust is automatically used. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Source Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Source Z Offset value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Source 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 Source Z Option when aspirating the Source Volume.	2 mm
Result Z Option	Defined reference point used when dispensing to the DEC. **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.	Tube Top
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 when dispensing to the DEC.	-18 mm
Air Push Z Option	Defined reference point used when dispensing to the DEC. **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 Air Push Z Offset.	Tube Top
Air Push 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 Air Push Z Option (Tube Top) when performing the Air Push at the DEC.	-18 mm

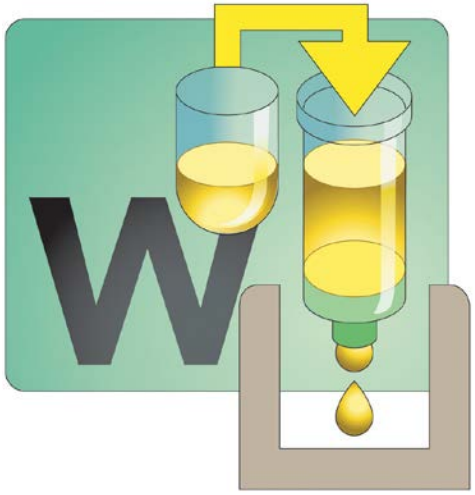
Wash - Rinsing

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Inside Rinse Z Offset to move down from the Z Safe Height. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Inside Rinse Z Offset value to move up from the bottom. **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 the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see Flow Rates.	10 mL/min

Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse. **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). **Auto Calculate**: Places the probe into the well and at the liquid level using the 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Outside Rinse Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Outside Rinse Z Offset value to move up from the bottom. **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 the Outside Rinse Z Option when rinsing the probe at the outside rinse position in the rinse station.	0 mm
GX 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
GX Rinse Pump Speed	Select High, Low, or Off.	OFF

Wash - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	



WASH - SEQUENCE OF STEPS

The following is an overview for the sequence of steps.

1 Move Mobile Rack
2 Aspirate
3 Dispense
4 Air Push
5 Inside Rinse
6 Outside Rinse

Move Mobile Rack

1 Move Z to Z Safe Height.
2 Move mobile rack (DEC Zone) over the drain position.

Aspirate

Reservoir

1 Move Z to Z Safe Height.
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate.
3 Move probe to DEC Well in DEC Zone.
4 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
5 Dispense Source Volume (from Reservoir) at Result Flow Rate.
6 Wait Equilibration Time.
7 Move Z to Z Safe Height.
8 If Source Volume is greater than syringe volume, repeat steps 2–7 until Source Volume delivered.

Tray

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to Source Well in Source Zone.
4 Lower probe into Source Well to Source Z Option and Source Z Offset using Liquid Level Detection, if selected.
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Wait Aspirate Equilibration Time.
7 Move Z to Z Safe Height.

Transfer Port

1 Move Z to Z Safe Height. 2 Aspirate Source Air Gap at Air Gap Flow Rate.
3 Move probe to well in Source Zone.
4 Lower probe to Source Z Option and Source Z Offset.
5 Set Transfer Port to On.
6 Aspirate Source Volume + Extra Volume at Source Flow Rate.
7 Wait Aspirate Equilibration Time.
8 Set Transfer Port to Off.
9 Move Z to Z Safe Height.

Dispense

Tray or Transfer Port

1 Move probe to DEC Well in DEC Zone.
2 Lower probe to Result Z Option (Tube Top) and Result Z Offset.
3 Dispense Source Volume at Result Flow Rate.
4 If Dispense Air Gap to DEC is selected and Extra Volume=0 µL, dispense Air Gap at Result Flow Rate. (If Source Volume is greater than Syringe Volume, skip this step until Source Volume delivered.)
5 Wait Equilibration Time.
6 Move Z to Z Safe Height.
7 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered.
8 If Dispense Air Gap to DEC is not selected or if Extra Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Extra Volume + Air Gap at Result Flow Rate.

Air Push

None

Skips air push.

Solenoid

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
6 Wait Purge Time.
7 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Set Voltage On to 24V Contact and Contact to Close (Contact Control) or turn on FC Valve (GX-27X or GX-281 FC Valve).
12 Wait Air Push Time.
13 Set Voltage Off to 24V Contact and Contact to Open (Contact Control) or turn off FC Valve (GX-27X or GX-281 FC Valve).
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Syringe

1 Move Z to Z Safe Height. 2 Move probe to DEC Well in DEC Zone.
3 Aspirate Air Gap at Aspirate Flow Rate.
4 Move probe to DEC Well in DEC Zone.
5 Aspirate Air Push Volume at Aspirate Flow Rate.
6 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
7 Dispense Air Push Volume at Dispense Flow Rate.
8 Wait Equilibration Time.
9 Move Z to Z Safe Height.
10 Repeat steps 4–9 until Air Push Volume is dispensed.
11 If Air Gap Volume>0:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
   c) Dispense Air Gap at Dispense Flow Rate.

Valve

1 Move Z to Z Safe Height. 2 Move probe to well in Inside Rinse Zone.
3 Aspirate Probe to Valve Volume at Aspirate Flow Rate.
4 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
5 Switch valve to gas.
6 Wait Purge Time.
7 Switch valve to probe.
8 Move Z to Z Safe Height.
9 Move probe to DEC Well in DEC Zone.
10 Lower probe to Air Push Z Option (Tube Top) and Air Push Z Offset.
11 Switch valve to gas.
12 Wait Air Push Time.
13 Switch valve to probe.
14 Wait Equilibration Time.
15 Move Z to Z Safe Height.
16 Move probe to well in Inside Rinse Zone.
17 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
18 Dispense Probe to Valve Volume at Aspirate Flow Rate.

Inside Rinse

If Inside Volume>0:

1 If Air Push is None and Source is Reservoir:
   a) Move probe to well in Inside Rinse Zone.
   b) Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.
2 Aspirate (from Reservoir) Inside Volume at Inside Flow Rate.
3 Dispense Inside Volume at Inside Flow Rate. If Inside Volume is greater than syringe volume, repeat steps 2–3 until Inside Volume delivered.
4 Move Z to Z Safe Height.

Outside Rinse

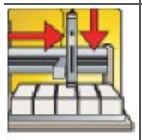
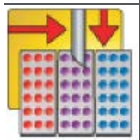
If Outside Volume>0:

1 Move Z to Z Safe Height.
2 Move probe to well in Outside Rinse Zone.
3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate.
5 Switch GX Rinse Pump on at GX Rinse Pump Speed, if selected.
6 Dispense Outside Volume at Outside Flow Rate.
7 Switch GX Rinse Pump off.
8 If Outside Volume>syringe volume, repeat steps 4–7 until Outside Volume is delivered.
9 Move Z to Z Safe Height.

TASKS - TWEAKS

Gilson supplies Tweaks tasks for use on the following instruments:

Tweaks Tasks

	GILSON TASK NAME AND DESCRIPTION	FOR USE ON THE FOLLOWING LIQUID HANDLERS:
	Aspirate This task aspirates liquid from the tray.	All except GX-271/GX-281 Liquid Handler (with GX Solvent System) and Quad-Z 215 with Disposable Tips
	Aspirate with Tips This task aspirates liquid from the tray.	Quad-Z 215 with Disposable Tips
	Deliver This task dispenses liquid through the probe.	All except GX-271/GX-281 Liquid Handler (with GX Solvent System) and Quad-Z 215 with Disposable Tips
	Deliver with Tips This task dispenses liquid through the probe.	Quad-Z 215 with Disposable Tips
	Move To This task moves the probe to the top, home, specified XY Coordinates, or specified Z Coordinate.	All
	Move To Zone This task moves the probe to a specified height, well, and zone.	All
	SS Aspirate This task aspirates liquid from the tray.	GX-271/GX-281 Liquid Handler (with GX Solvent System)
	SS Deliver This task dispenses liquid through the probe.	GX-271/GX-281 Liquid Handler (with GX Solvent System)

Aspirate

This task aspirates liquid from the tray.

For more information about the properties on each tab, see:

Aspirate - Properties

Aspirate - Instruments

Aspirate - Sequence of Steps

Aspirate - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Volume	The quantity of a sample.	0 µL
Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after the aspirate.	0 min

Aspirate - Instruments

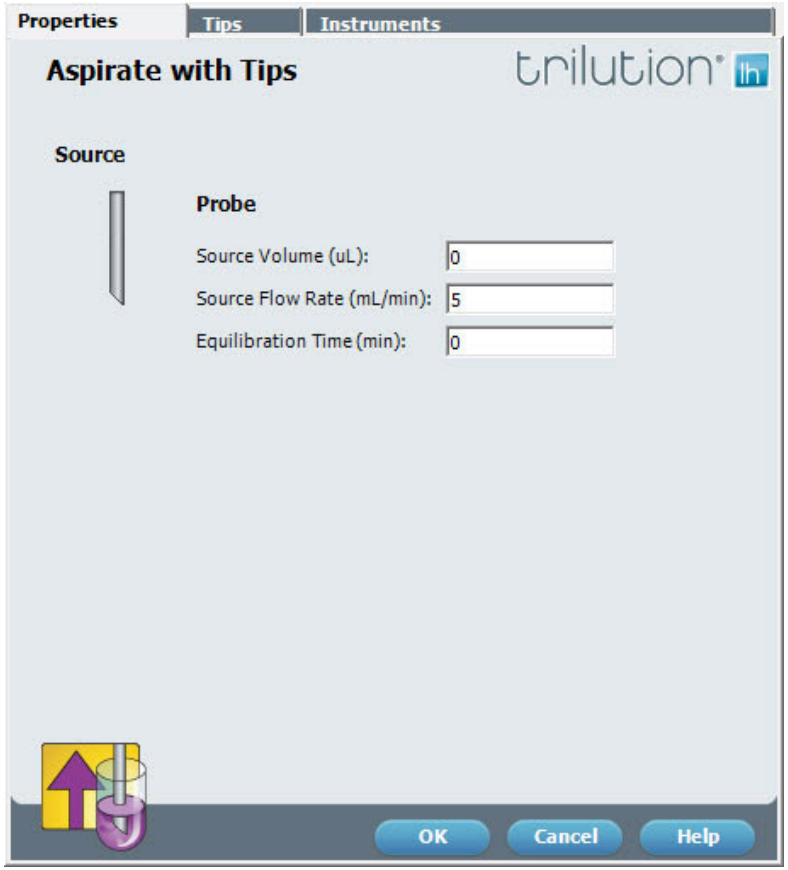
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

ASPIRATE - SEQUENCE OF STEPS

1 Aspirate Source Volume at Source Flow Rate.
2 Wait Equilibration Time.

Aspirate with Tips

This task aspirates liquid from the tray.



For more information about the properties on each tab, see:

Aspirate with Tips - Properties

Aspirate with Tips - Tips

Aspirate with Tips - Instruments

Aspirate with Tips - Sequence of Steps

Aspirate with Tips - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Volume	The quantity of a sample.	0 µL
Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after the aspirate.	0 min

Aspirate with Tips - Tips

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Prewet Tip	Select to wet the tip prior to aspirating the Source Volume.	
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 µL

Aspirate with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

ASPIRATE WITH TIPS - SEQUENCE OF STEPS

1 If Prewet Tip is selected:
   a) Aspirate Prewet Volume at Source Flow Rate.
   b) Dispense Prewet Volume at Result Flow Rate.
   If Prewet Tip is not selected:
   a) Skip to step 2.
2 Aspirate Source Volume at Source Flow Rate.
3 Wait Equilibration Time.

Deliver

This task dispenses liquid through the probe.

For more information about the properties on each tab, see:

Deliver - Properties

Deliver - Instruments

Deliver - Sequence of Steps

Deliver - Properties

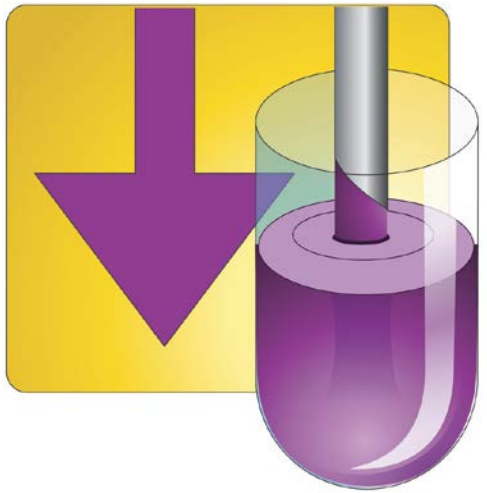
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Volume	The quantity of liquid delivered.	0 µL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after the dispense.	0 min

Deliver - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DELIVER - SEQUENCE OF STEPS

1 Dispense Result Volume at Result Flow Rate.
2 Wait Equilibration Time.



Deliver with Tips

This task dispenses liquid through the probe.

For more information about the properties on each tab, see:

Deliver with Tips - Properties

Deliver with Tips - Instruments

Deliver with Tips - Sequence of Steps

Deliver with Tips - Properties

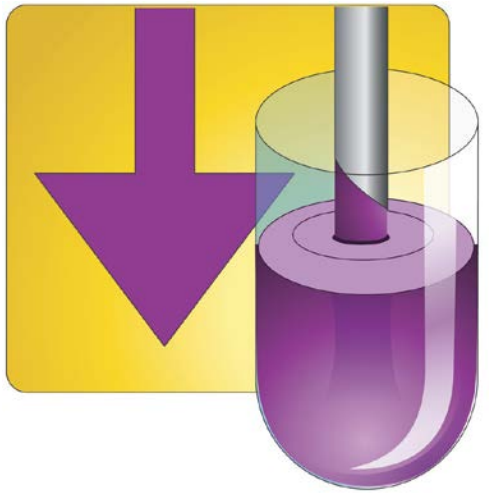
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Result Volume	The quantity of liquid delivered.	0 µL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after the dispense.	0 min

Deliver with Tips - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

DELIVER WITH TIPS - SEQUENCE OF STEPS

1 Dispense Result Volume at Result Flow Rate.
2 Wait Equilibration Time.



Move To

This task moves the probe to the top, home, specified XY Coordinates, or specified Z Coordinate.

For more information about the properties on each tab, see:

Move To - Properties

Move To - Instruments

Move To - Sequence of Steps

Move To - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Move To	Select one of the locations to move to: Top, Home, XY Coordinates or Z Coordinates	Top
XY Coordinate X Coordinate	The X coordinate to move to.	0 mm
XY Coordinate Y Coordinate	The Y coordinate to move to.	0 mm
Z Coordinate Coordinate	The Z coordinate to move to	0 mm

Move To - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	

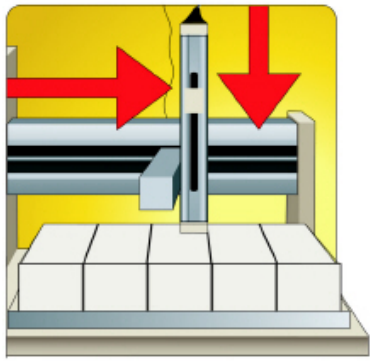
MOVE TO - SEQUENCE OF STEPS

If Top is selected, move Z to top.

If Home is selected, move probe to Home.

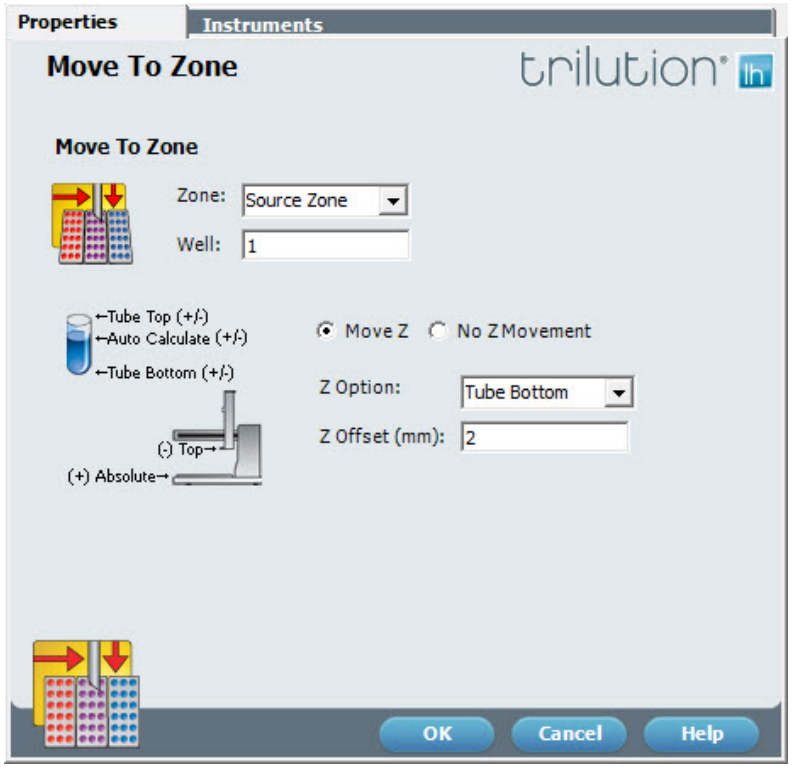
If XY Coordinates is selected, move probe to X Coordinate or Y Coordinate.

If Z Coordinate is selected, move probe to Z Coordinate.



Move To Zone

This task moves the probe to a specified height, well, and zone.



For more information about the properties on each tab, see:

Move To Zone - Properties

Move To Zone - Instruments

Move To Zone - Sequence of Steps

Move To Zone - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Zone	The zone to move to.	
Well	Enter the well number in the zone. When using a multiple-probe instrument, type #x where x is a value defined in the sample list.	1
Move Z/No Z Movement	Select Move Z to use the Z Option and Z Offset. Select No Z Movement to move in the XY directions only (probe remains at Z Safe Height).	Move Z

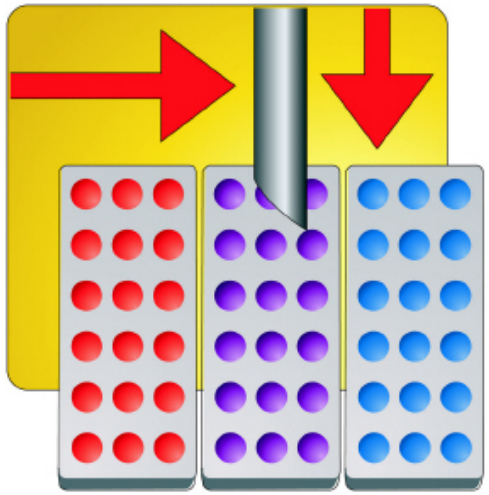
Move Z Z Option	One of six defined reference points, selected from a drop-down list. **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places the probe into the well and at the liquid 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. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Z Offset to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Z Offset value to move up from the bottom. **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
Move Z 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

Move To Zone - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	

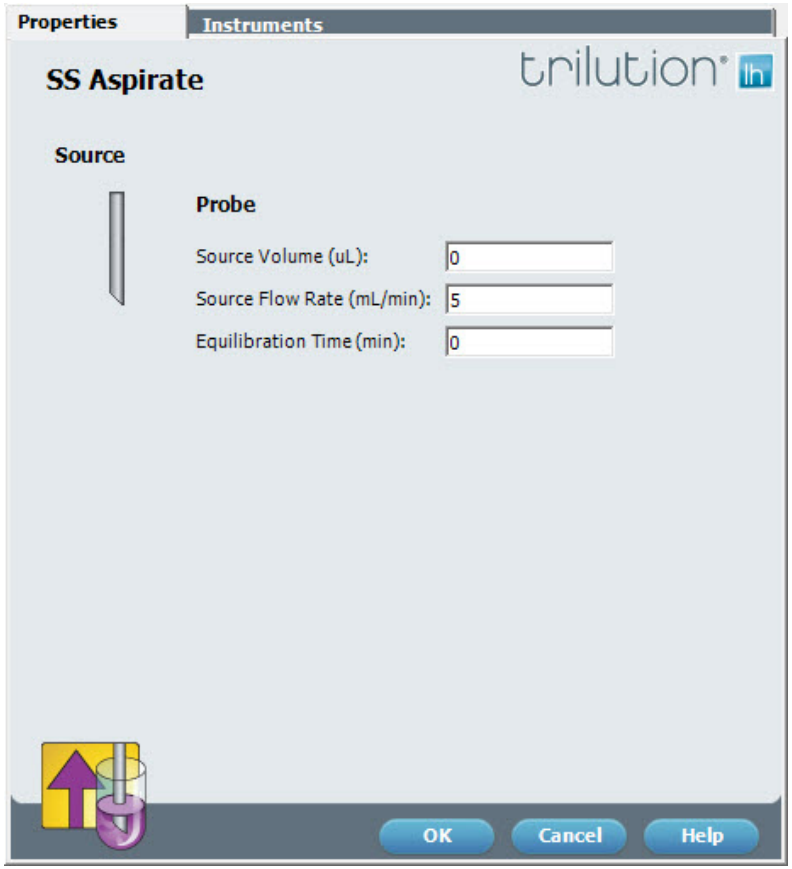
MOVE TO ZONE - SEQUENCE OF STEPS

1 Move Z to Z Safe Height.
2 Move probe to Well in Zone.
3 If Move Z is selected, lower probe into well to Z Option and Z Offset.



SS Aspirate

This task aspirates liquid from the tray.



For more information about the properties on each tab, see:

SS Aspirate - Properties

SS Aspirate - Instruments

SS Aspirate - Sequence of Steps

SS Aspirate - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Source Volume	The quantity of a sample.	0 µL
Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after the aspirate.	0 min

SS Aspirate - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS ASPIRATE - SEQUENCE OF STEPS

1 Aspirate Source Volume at Source Flow Rate.
2 Wait Equilibration Time.

SS Deliver

This task dispenses liquid through the probe.

For more information about the properties on each tab, see:

SS Deliver - Properties

SS Deliver - Instruments

SS Deliver - Sequence of Steps

SS Deliver - Properties

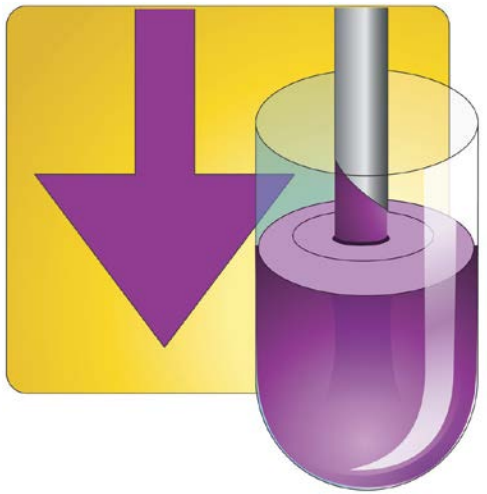
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Result Volume	The quantity of liquid delivered.	0 µL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see Flow Rates.	5 mL/min
Equilibration Time	The time the program waits after the dispense.	0 min

SS Deliver - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS DELIVER - SEQUENCE OF STEPS

1 Switch solvent valve to Solvent Valve Position and dispense Result Volume at Result Flow Rate.
2 Wait Equilibration Time.



TASKS - AUXILIARY

Refer to the information below for which instruments can use each Auxiliary task.

Auxiliary Tasks

	GILSON TASK NAME AND DESCRIPTION
	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.
	Read Display This task reads the message on the front panel display of the selected instrument and then records it in the log. The Read Display task can be used for the following instruments: • 215 Liquid Handler • 215 Liquid Handler without Pump • GX-281 Analytical Liquid Handler • GX-281 Liquid Handler without Pump • GX-281 Prep Liquid Handler • Quad-Z 215
	Run Executable This task invokes an external application.

Scan Bar Codes

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.

The Scan Bar Codes task can be used on the following instructions:

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

Set Electrical Contact

This task opens and powers off, closes and powers on, or pulses the specified output contact on the specified instrument.

The Set Electrical Contact task can be used on the following instruments:

- 215 Liquid Handler
- 215 Liquid Handler without Pump
- 223 Sample Changer
- 506C System Interface
- GX-271 Analytical Liquid Handler
- GX-271 ASPEC without Pump
- GX-271 Liquid Handler without Pump
- GX-271 Prep Liquid Handler
- GX-274 ASPEC without Pump
- GX-274 Liquid Handler without Pump
- GX-281 Analytical Liquid Handler
- GX-281 Liquid Handler without Pump
- GX-281 Prep Liquid Handler
- Quad-Z 215

	Set Valve Position This task opens and powers off or closes and powers on the specified contact (solenoid) or valve on the specified instrument or changes the valve position on the VALVEMATE. The Set Valve Position task can be used on the following instruments: • 215 Liquid Handler • 215 Liquid Handler without Pump • GX-271 Analytical Liquid Handler • GX-271 ASPEC without Pump • GX-271 Liquid Handler without Pump • GX-271 Prep Liquid Handler • GX-274 ASPEC without Pump • GX-274 Liquid Handler without Pump • GX-281 Analytical Liquid Handler • GX-281 Liquid Handler without Pump • GX-281 Prep Liquid Handler • VALVEMATE II
	Voltage On - Off This task opens and powers off or closes and powers on a specified contact on a specified liquid handler.
	Wait This task waits a specified length of time or initiates a wait in the method until a contact state or contact state change is detected on the specified input contact.
	Wait (Scheduled) This task waits a specified length of time but allows other tasks to run during the wait when used in a scheduled method.
	Write to Display This task displays a message on the front panel display of the selected instrument. The Write Display task can be used for the following instruments: • 215 Liquid Handler • 215 Liquid Handler without Pump • GX-281 Analytical Liquid Handler • GX-281 Liquid Handler without Pump • GX-281 Prep Liquid Handler • Quad-Z 215

GSIOC

This task sends a GSIOC command to the specified instrument or unit ID.

For more information about the properties on each tab, see:

GSIOC - Properties

GSIOC - Sequence of Steps

GSIOC - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
GSIOC Mode	The GSIOC Modes: GSIOC with ID or GSIOC. GSIOC with ID command sends a GSIOC command to an instrument at a specified unit ID. GSIOC sends a GSIOC command to a specific instrument.	GSIOC
GSIOC with ID Unit ID	The unit ID of the instrument that the task will affect.	1
GSIOC Instrument Name	The instrument that the task will affect.	
Command Type	Select Buffered or Immediate command type.	Immediate
Command String	The string that sends an instruction to the Instrument.	

GSIOC - SEQUENCE OF STEPS

1 Send Command of Command Type (Immediate or Buffered) to the Instrument.

Log Variables

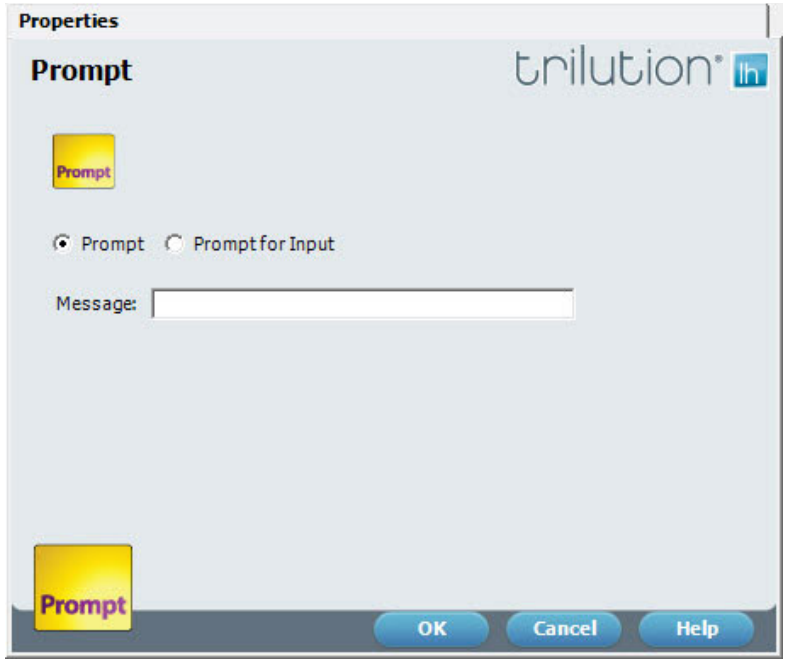
This task records the values used for local and global variables during a run and stores them in a spreadsheet, which always includes columns for Time Stamp, Sample Line, Method Name, Method Iteration, and Notes. The file is automatically named VARIABLE LOG_YYYY-MM-DD HH-MM-SS_RUN NAME.XML, where _RUN 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 LH 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.

Optionally, type notes in the Notes field to be recorded with the selected variables.

	A	B	C	D	E	F	G	H
1	Time Stamp	Sample Line	Method Name	Method Iteration	Notes	#DEC Well	#Result Well	#Source Well
2	8/25/2011 10:25	1	SPE Processing Method	1		1	1	1
3	8/25/2011 10:30	2	SPE Processing Method	2		2	2	2
4	8/25/2011 10:34	3	SPE Processing Method	3		3	3	3

Prompt

This task displays a prompt dialog with the selected message.



For more information about the properties on each tab, see:

Prompt - Properties

Prompt - Sequence of Steps

Prompt - Properties

PROPERTY NAME	DESCRIPTION	DEFAULT VALUE
Prompt/Prompt for Input	Prompt displays message. Prompt for Input displays message and allows user to input a valve.	Prompt
Message	Enter the text to display in the message box.	

PROMPT - SEQUENCE OF STEPS

1 Display dialog box with Message text

Read Display

This task reads the message on the front panel display of the selected instrument and then records it in the log.

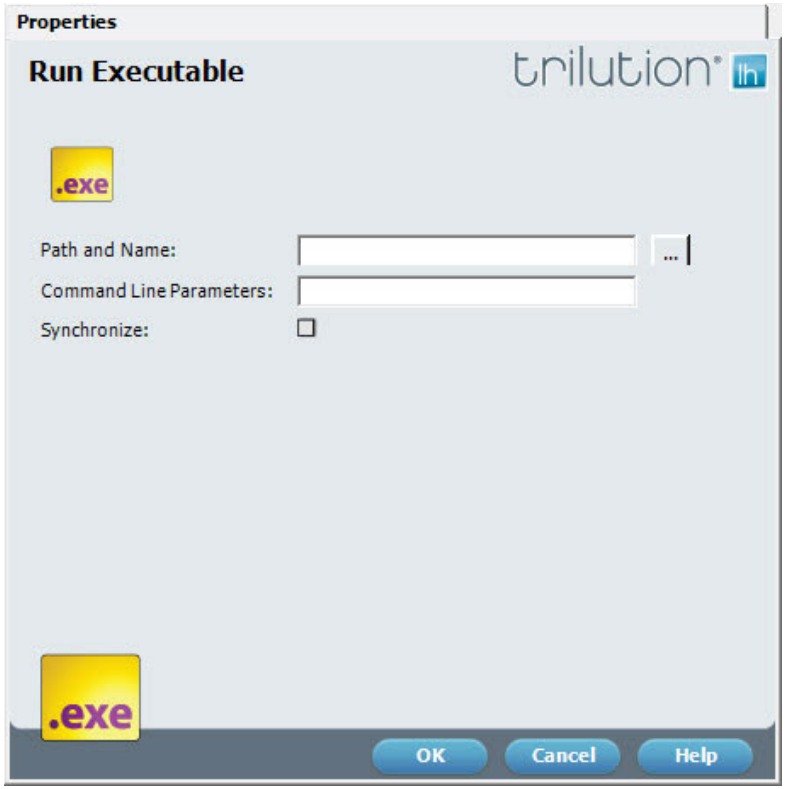
For more information about the properties on each tab, see:
Read Display - Properties

Read Display - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument	The instrument that the task will affect.	
Line	For two-line displays, indicate the line for which to read and record the message.	1

Run Executable

This task invokes an external application.



For more information about the properties on each tab, see:
Run Executable - Properties

Run Executable - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT
Path and Name	File path of the executable to run.	
Command Line Parameters	Optional: The information sent to the program located at the Path and Name.	
Synchronize	Select the check box for Synchronize to wait for the external program to close before continuing task execution. Clear the check box for synchronize to start the external program and then immediately resume task execution.	Cleared

Scan Bar Codes

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, see:

Scan Bar Codes - Properties

Scan Bar Codes - Sequence of Steps

Scan Bar Codes - Properties

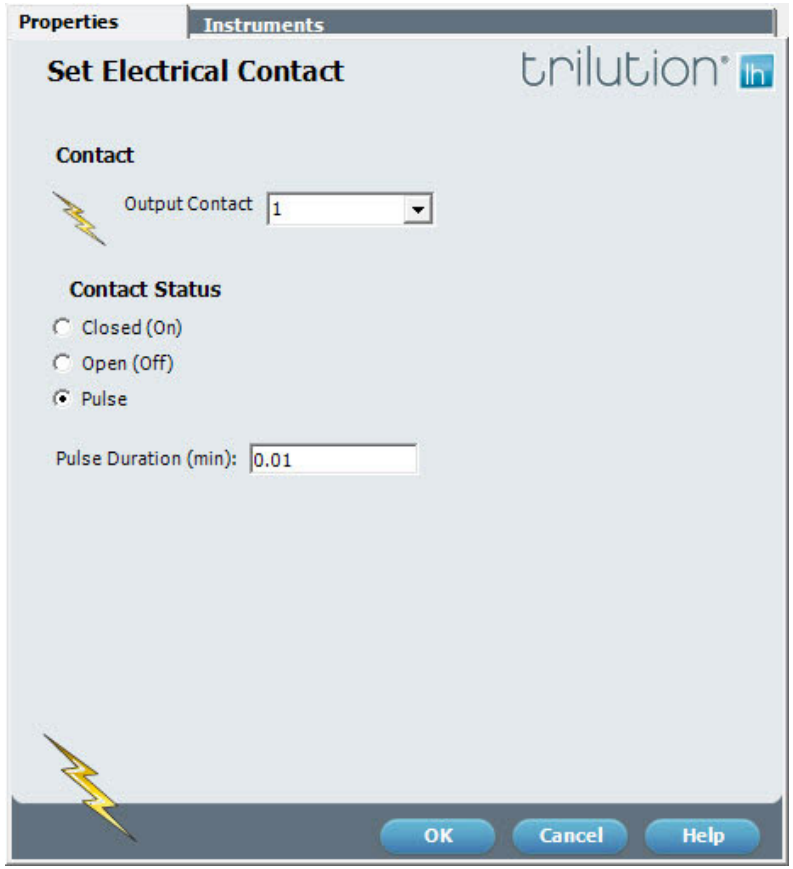
PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument	The instrument that the task will affect.	

SCAN BAR CODES - SEQUENCE OF STEPS

1 Scan bar codes of all racks defined in the bed layout.

Set Electrical Contact

This task opens and powers off, closes and powers on, or pulses the specified output contact on the specified instrument.



For more information about the properties on each tab, see:

Set Electrical Contact - Properties
Set Electrical Contact - Instruments
Set Electrical Contact - Sequence of Steps

Set Electrical Contact - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Output Contact	The output contact to act on for the specified instrument.	1
Contact Status Closed (On)	Closes and powers on the specified output contact.	

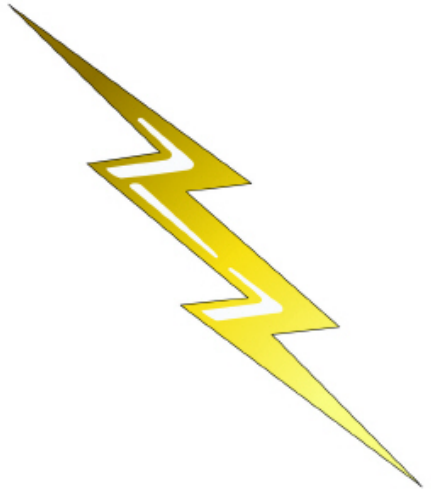
Contact Status Open (Off)	Opens and powers off the specified output contact.	
Contact Status Pulse	Pulses the specified output contact.	Default
Pulse Pulse Duration	The time the program will wait between output state toggles. Appears when Pulse is selected for Contact Status.	0.01 min

Set Electrical Contact - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument	The instrument type that the command will affect.	

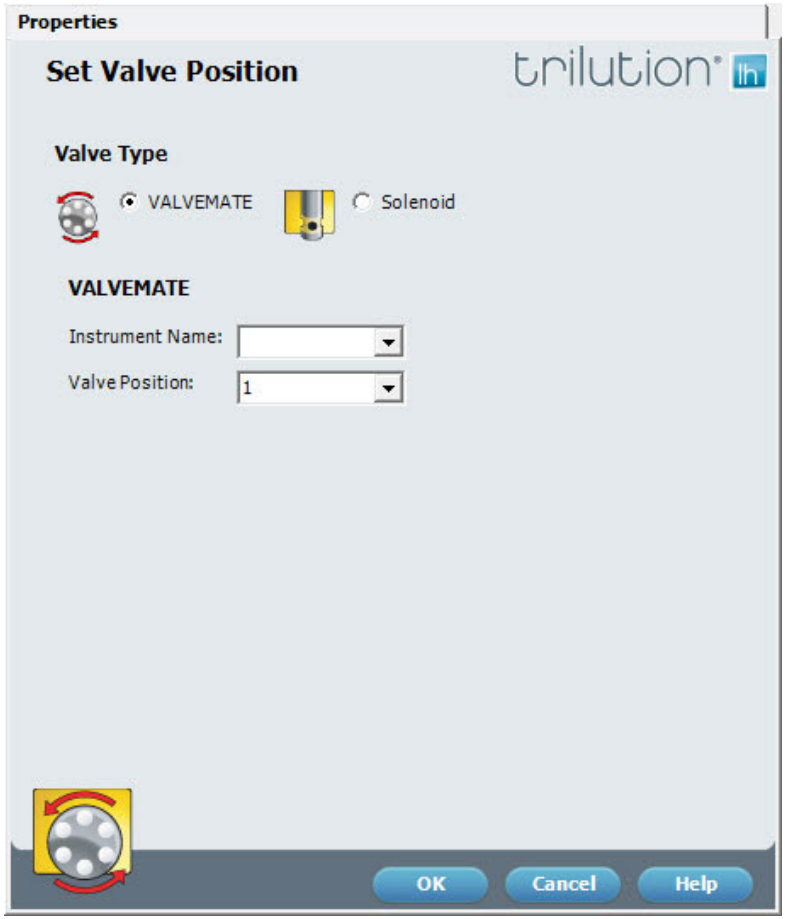
SET ELECTRICAL CONTACT - SEQUENCE OF STEPS

1 Close, Open, or Pulse the specified Output Contact.



Set Valve Position

This task opens and powers off or closes and powers on the specified contact (solenoid) or valve on the specified instrument or changes the valve position on the VALVEMATE.



For more information about the properties on each tab, see:

Set Valve Position - Properties

Set Valve Position - Sequence of Steps

Set Valve Position - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Valve Type	Select Solenoid or VALVEMATE.	Solenoid
VALVEMATE Instrument Name	The VALVEMATE on which to set the valve position.	

VALVEMATE Valve Position	The position that the valve will switch to.	1
Solenoid Instrument	The instrument type that the task will affect.	
Solenoid Closed (On)	Closes and powers on the specified output contact.	
Solenoid Open (Off)	Opens and powers off the specified output contact.	
Solenoid GX-27X or GX-281 FC Valve	Select this option to set the state of the GX-27X or GX-281 FC Valve.	
Solenoid Contact	Select this option to set the state of the solenoid valve.	1
Solenoid - Contact Contact	The output contact on the instrument that controls the solenoid valve.	1
Solenoid - Contact 24V Contact	The 24V contact on the instrument that controls the solenoid valve.	1

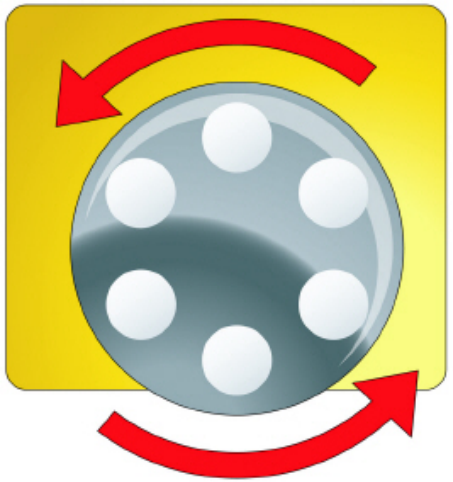
SET VALVE POSITION - SEQUENCE OF STEPS

Solenoid

1 Close (turn on) or Open (turn off) the specified contact or valve.

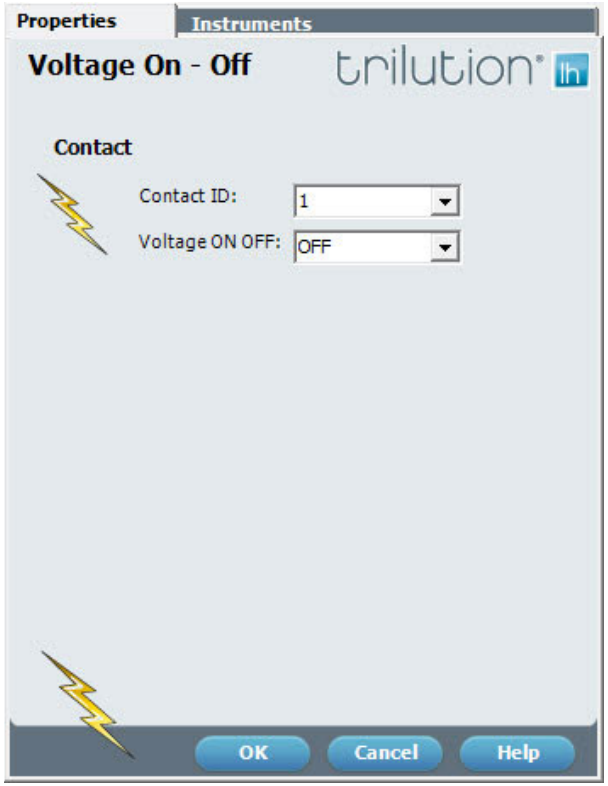
VALVEMATE

1 Switch valve to specified position.



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, see:

Voltage On - Off - Properties
Voltage On - Off - Instruments
Voltage On - Off - Sequence of Steps

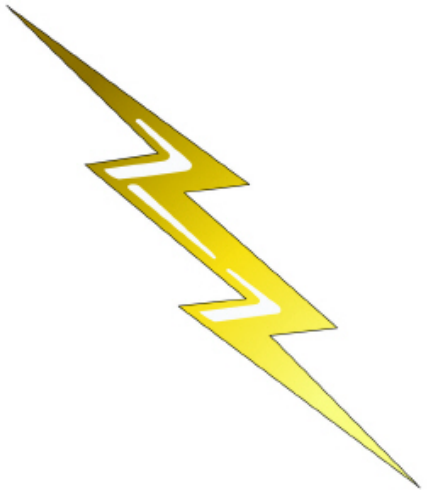
Voltage On - Off - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Contact ID	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

Voltage On - Off - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Liquid Handler	The liquid handler that the task will affect.	

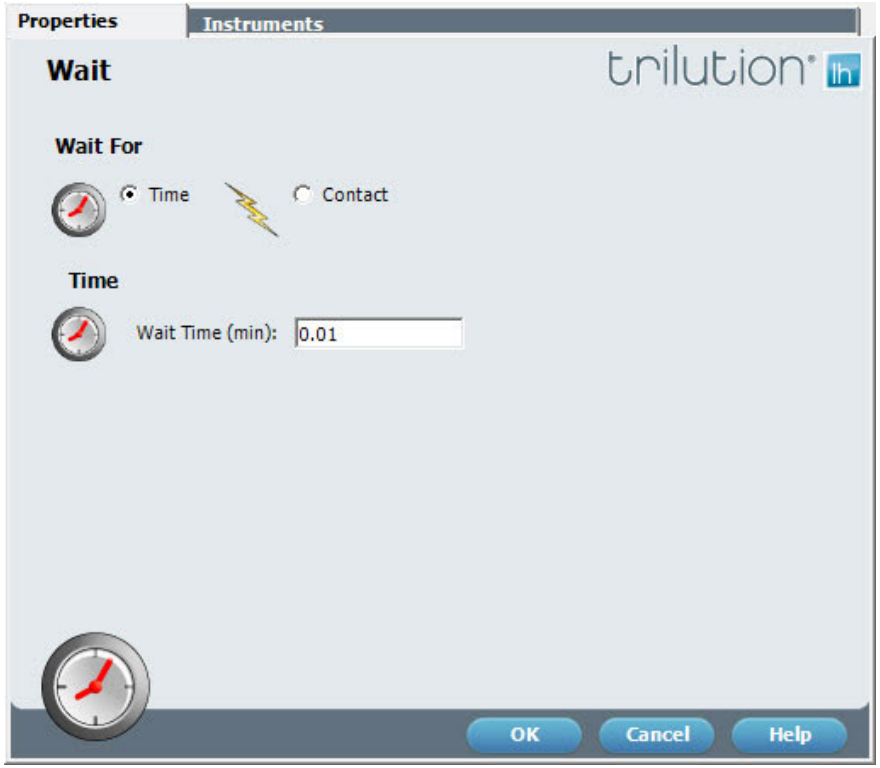
VOLTAGE ON - OFF - SEQUENCE OF STEPS



1 Close and turn on or open and turn off the specified contact.

Wait

This task waits a specified length of time or initiates a wait in the method until a contact state or contact state change is detected on the specified input contact.



For more information about the properties on each tab, see:

Wait - Properties

Wait - Instruments

Wait - Sequence of Steps

Wait - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Wait For	Select Time or Contact.	Time
Time Wait Time	Time the program waits before starting the next task.	0.01 min
Contact Change in State	Select to initiate a wait until a contact change is detected for the specified input contact (Contact Name) on the specified instrument.	Selected
Contact Specific State	Select to initiate a wait until a specified contact state change is detected for the specified input contact (Contact Name) on the specified instrument	Cleared

Contact Contact Name	The input contact being monitored for a state change.	A
Contact Message to Display	Enter the text to display in the message box.	
Contact Contact 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.	ON

Wait - Instruments

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument	The instrument type that the task will affect.	

WAIT - SEQUENCE OF STEPS

Time

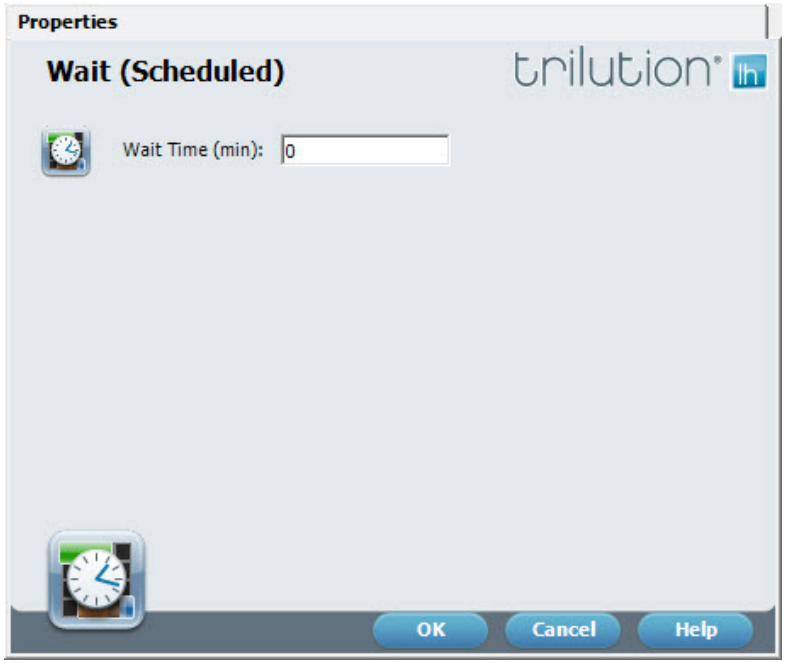
1 Wait for Wait Time to elapse.

Contact

1 Wait for specified input contact to change state or to change to a specific state while displaying the optional message.

Wait (Scheduled)

This task waits a specified length of time but allows other tasks to run during the wait when used in a scheduled method.



For more information about the properties on each tab, see:
Wait (Scheduled) - Properties

Wait (Scheduled) - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Wait Time	The length of time for a wait in a scheduled method.	0

Write to Display

This task displays a message on the front panel display of the selected instrument.

For more information about the properties on each tab, see:
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 Instrument's front panel.	Message
Line	For two-line displays, indicate the line on which to display the message.	1

TASKS - UTILITY TASKS

Utility tasks are for use in Gilson-supplied tasks only.

RINSE LOCATIONS

Rinse locations are assigned to zones in the bed layout. Inside and outside rinse zones are then chosen in the task.

Click the links for information about the recommended rinse positions for the:

- 215 Family
- 223 Sample Changer
- GX-241 II ASPEC without Pump
- GX-241 II Liquid Handler without Pump
- GX-271 Liquid Handlers and GX-271 ASPEC without Pump
- GX-274 Liquid Handler without Pump and GX-274 ASPEC without Pump
- GX-281 Liquid Handlers

215 Family

Bed Layout Trays (Templates)

215 6-Position for AutoMix

215 for Code 517 Rack

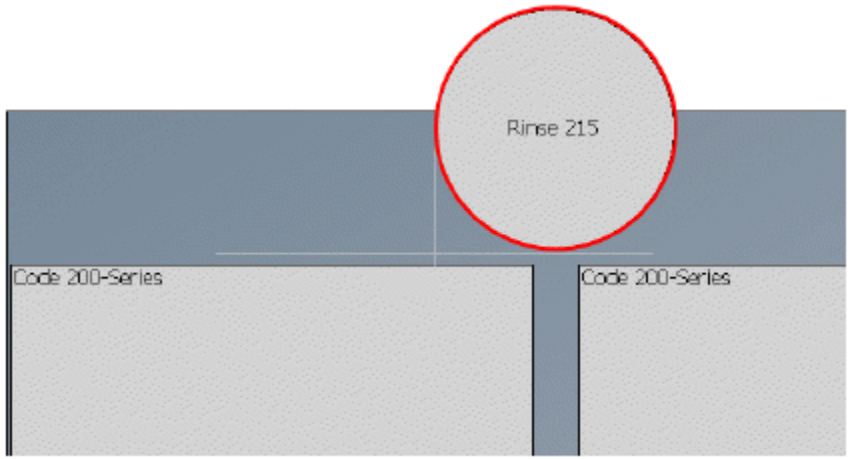
215 for Five Code 200-Series Racks

215 for Seven XL Racks

Quad-Z 215

Quad-Z 215 with Tips

Rinse 215 (Footprint)



Rinse 215

Drain 215 Body

Rinse 215 Insert

Rinse 215 Deep Short Insert

Rinse 215 Deep Tall Insert

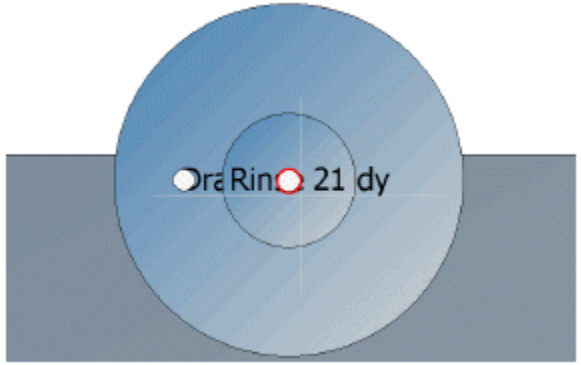
Rinse 215 Flow-Through Short Insert

Rinse 215 Flow-Through Tall Insert

Rinse 215 Shallow Short Insert

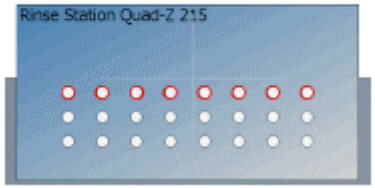
Rinse 215 Shallow Tall Insert

Inside Rinse Location (Left Well)

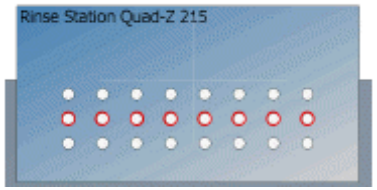


Outside or Flow-Through Rinse Location (Center Well)

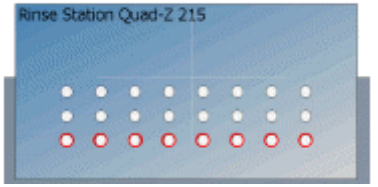
Rinse Station Quad-Z 215



Flow-Through Rinse Locations (Top Wells)

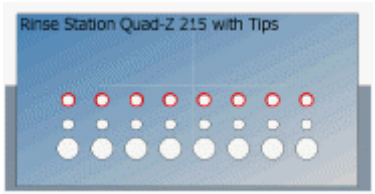


Inside Rinse Locations
(Center Trough—designated as wells)

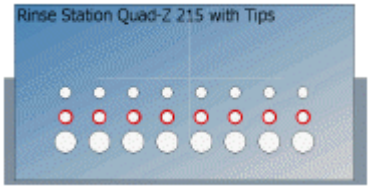


Outside Rinse Locations (Bottom Wells)

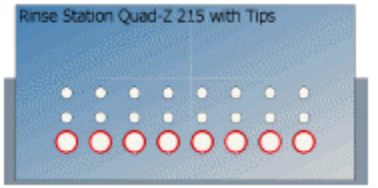
Rinse Station Quad-Z 215 with Tips



Flow-Through Rinse Locations (Top Wells)



Inside Rinse Locations
(Center Trough—designated as wells)



Outside Rinse Locations (Bottom Wells)

223 Sample Changer

Bed Layout Trays (Templates)

223 for Antlers + Code 20-Series High

223 for Antlers + Code 20-Series Low

Port Bar Large 223 (Footprint)

Port Bar 223 Antlers Code 0-Series (Rack)

Port Bar 223 Antlers Code 30-Series (Rack)

Bed Layout Trays (Templates)

223 for Four Code 20-Series High

223 for Four Code 20-Series Low

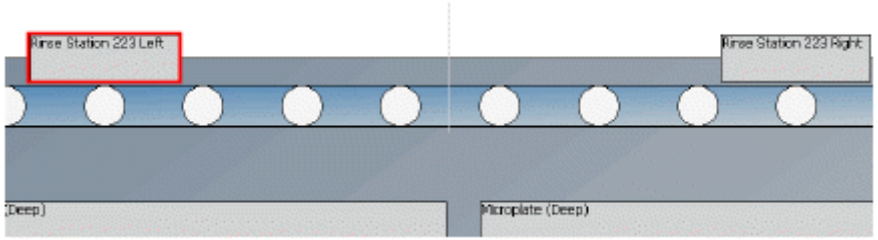
223 for Four Deep Microplates

223 for Four Shallow Microplates

Port Bar 223 (Footprint)

Port Bar 223 (Rack)

Rinse Station 223 Left (Footprint)



Rinse Station 223 Left

Rinse Station XL Short Left (Rack)

	TRILUTION Label	
Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
Outside Deep Rinse (Right Well)	Rinse XL (Flow)	45 mm wash cylinder

Inside Rinse Location (Left Well)

Outside Shallow Rinse Location (Center Well)

Outside Deep Rinse Location (Right Well)

Rinse Station 223 Tall Left (Rack)

	TRILUTION Label	
Inside Rinse (Left Well)	Drain XL	0 mm rinse depth

Inside Rinse Location (Left Well)

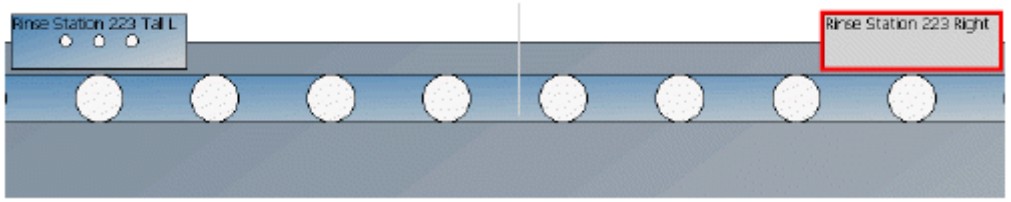
Outside Shallow Rinse Location (Center Well)

Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth

Outside Deep Rinse Location (Right Well)

Outside Deep Rinse (Right Well)	Rinse XL (Deep)	85 mm wash cylinder

Rinse Station 223 Right (Footprint)



Rinse Station 223 Right

Rinse Station 223 Short Right (Rack)

TRILUTION Label

Inside Rinse Locations (Right Well)

Inside Rinse (Right Well)	Drain XL	0 mm rinse depth

Outside Shallow Rinse Locations (Center Well)

Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth

Outside Deep Rinse Locations (Left Well)

Outside Deep Rinse (Left Wells)	Rinse XL (Flow)	45 mm wash cylinder

Rinse Station 223 Tall Right (Rack)

TRILUTION Label

Inside Rinse Locations (Right Well)

Inside Rinse (Right Wells)	Drain XL	0 mm rinse depth

Outside Shallow Rinse Locations (Center Well)

Outside Shallow Rinse (Center Wells)	Rinse XL (Shallow)	10 mm rinse depth

Outside Deep Rinse Locations (Left Well)

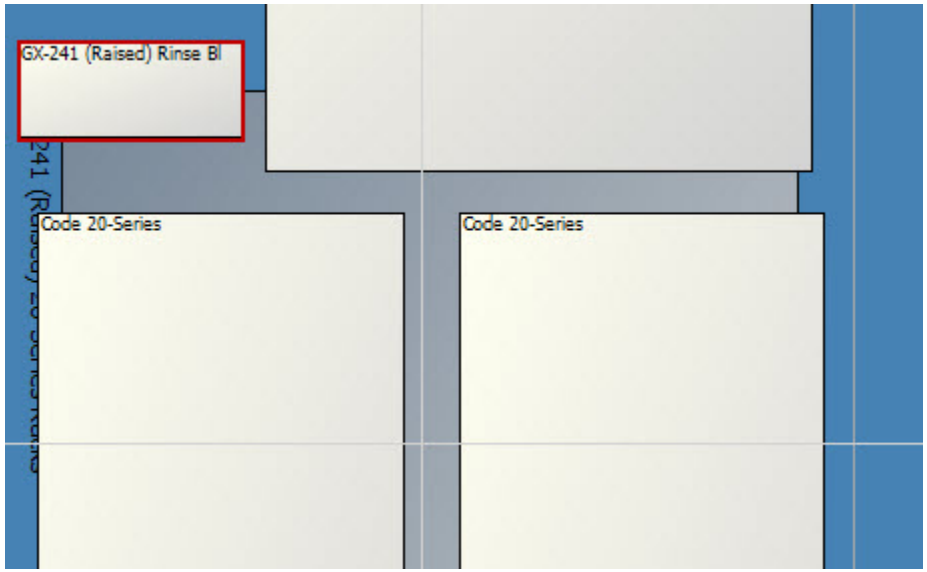
Outside Deep Rinse (Left Wells)	Rinse XL (Deep)	85 mm wash cylinder

GX-241 II ASPEC without Pump

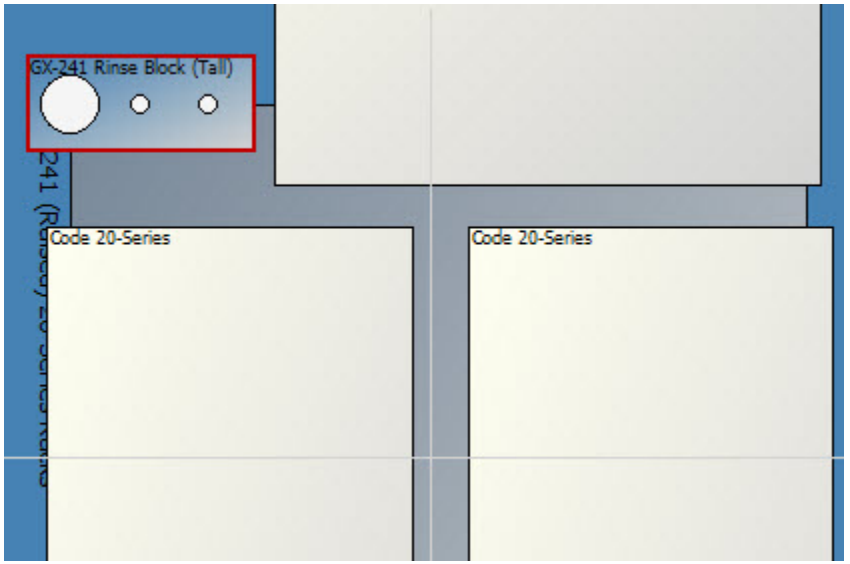
Bed Layout Trays (Templates)

GX-241 (Raised) 20-Series Racks

GX-241 (Raised) 20-Series Racks with Direct Inject



GX-241 (Raised) Rinse Block

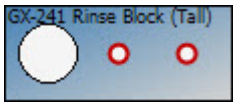


GX-241 Rinse Block (Tall)

TRILUTION Label

Inside Rinse/Drain Location (Left Well)

Inside Rinse/Drain Location	GX-241 Rinse Block Drain (Short)



Outside Rinse Locations

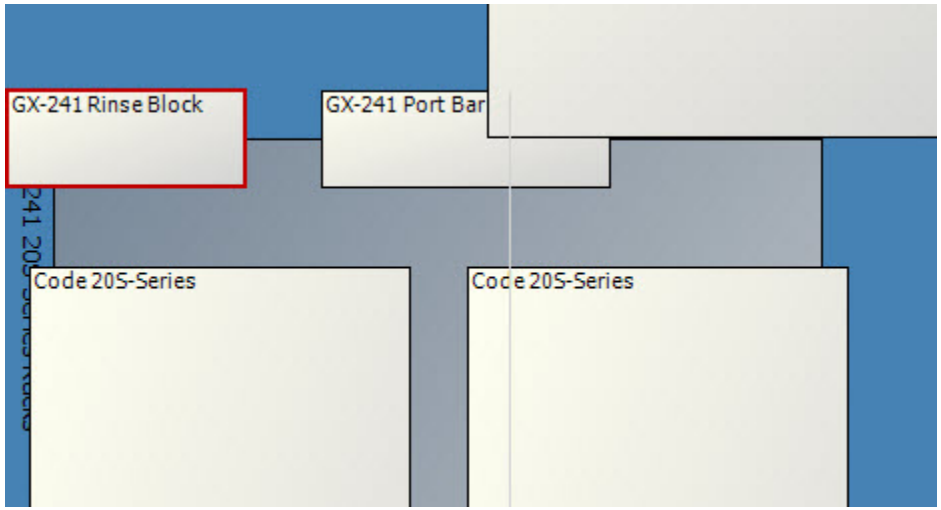
Outside Rinse Locations)	GX-241 Rinse Block Rinse (Short)

GX-241 II Liquid Handler without Pump

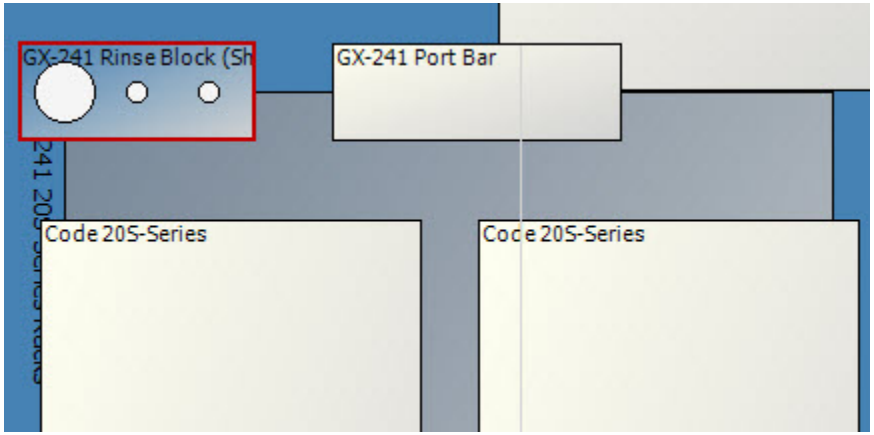
Bed Layout Trays (Templates)

GX-241 20S-Series Racks

GX-241 Rinse Block

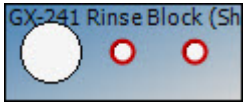


GX-241 Rinse Block (Short)



GX-241 Rinse Block (Short)

Inside Rinse/Drain Location (Left Well)



Outside Rinse Locations

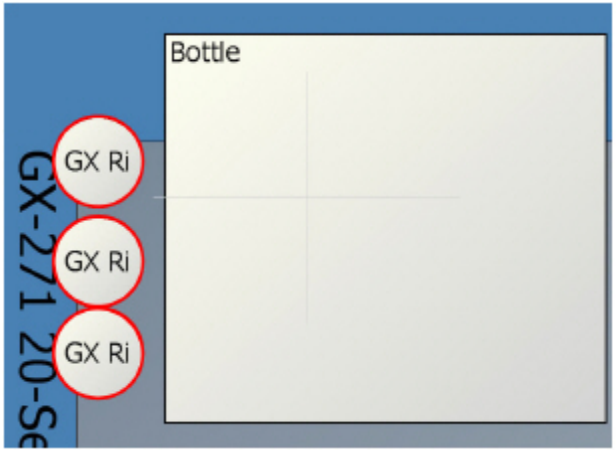
	TRILUTION Label
Inside Rinse/Drain Location (Left Well)	GX-241 Rinse Block Drain (Short)
Outside Rinse Locations	GX-241 Rinse Block Rinse (Short)

GX-271 Liquid Handlers and GX-271 ASPEC without Pump

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 GPC Clean-up System
GX-271 200-Series Racks
GX-271 200-Series Racks with Direct Inject

GX Rinse Stations (Footprints)



GX Rinse Stations

Drain/Rinse Station GX Short (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	125	26034554

Drain/Rinse Station GX Short (56 mm Probe) (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	125	26034554

Drain/Rinse Station for Inside Rinse of Probe

Drain/Rinse Station GX Tall (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	175	26034555

Drain/Rinse Station GX Extra Tall (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	210	26034556

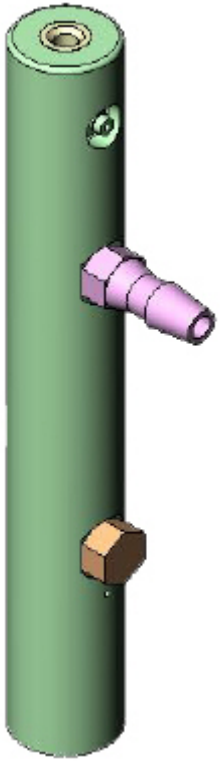
Rinse Station GX Short (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	125	26034552

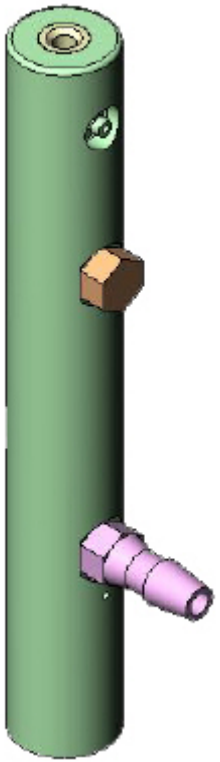
Rinse Station GX Short (56 mm Probe) (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	125	26034552

Rinse Station GX Tall (Rack)



Rinse Station for Outside Rinse of Probe (Static)



Rinse Station for Outside Rinse of Probe (Flowing)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	175	26034551

Rinse Station GX Extra Tall (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	210	26034553

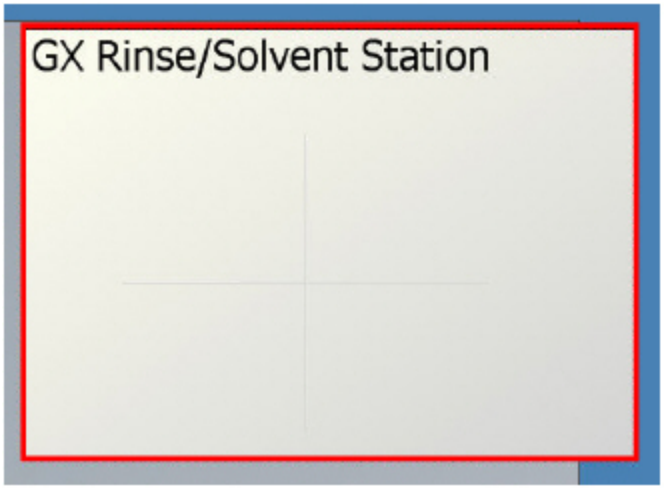
GX-274 Liquid Handler without Pump and GX-274 ASPEC without Pump

Bed Layout Tray (Template)

GX-274 20-Series Racks

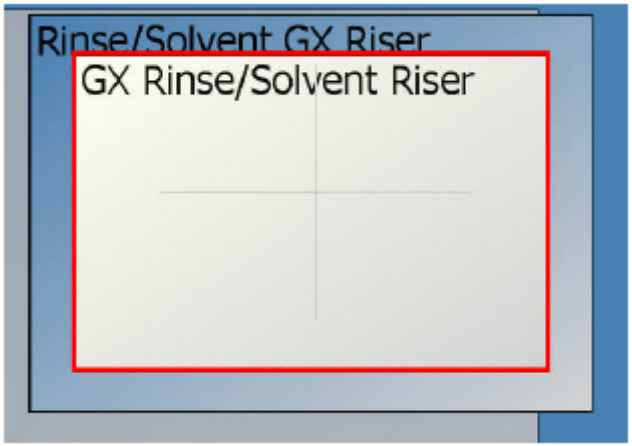
GX-274 200-Series Racks

GX Rinse/Solvent Station (Footprint)

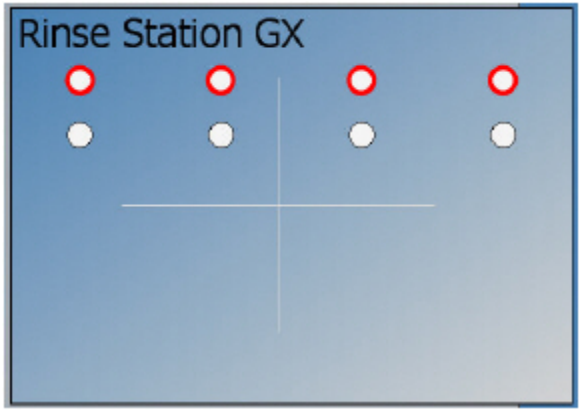


GX Rinse/Solvent Station

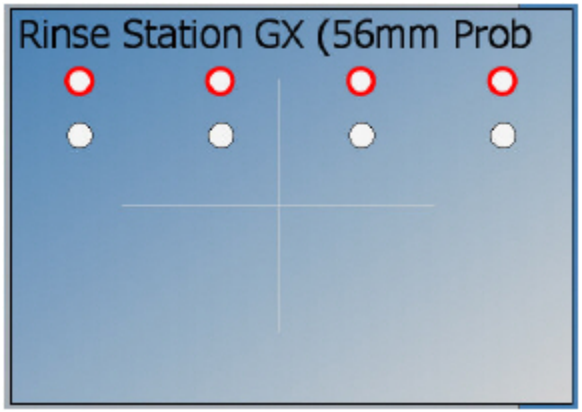
GX Rinse/Solvent Riser (Rack)



GX Rinse/Solvent Riser

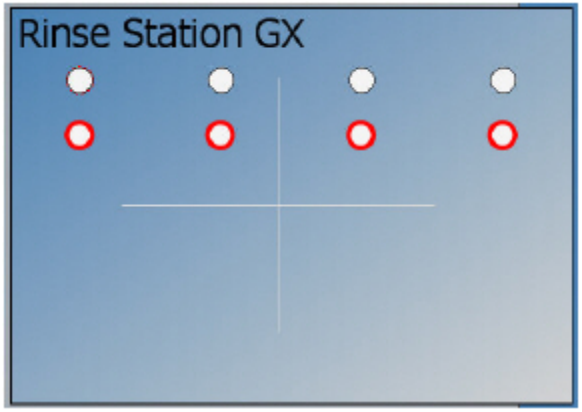


Flow-Through Rinse Locations (Top Wells)



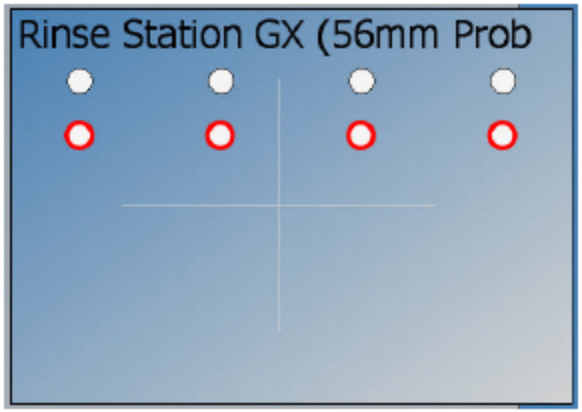
Flow-Through Rinse Locations (Top Wells)

Rinse Station GX (Rack)



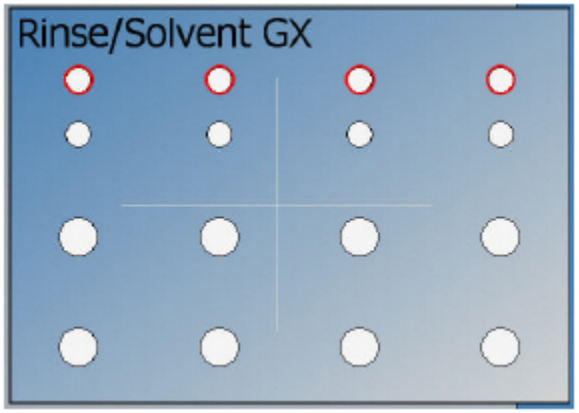
Inside Rinse Locations (Bottom Wells)

Rinse Station GX (56mm Probes)

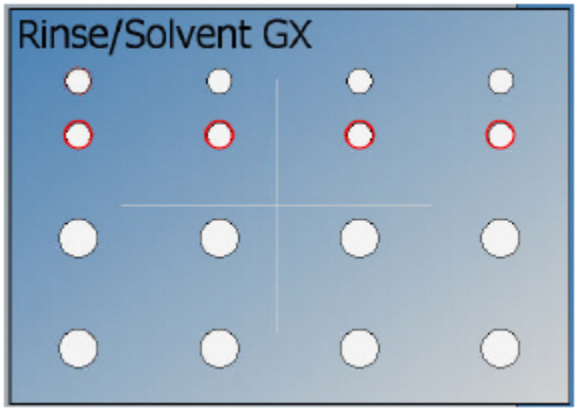


Inside Rinse Locations (Bottom Wells)

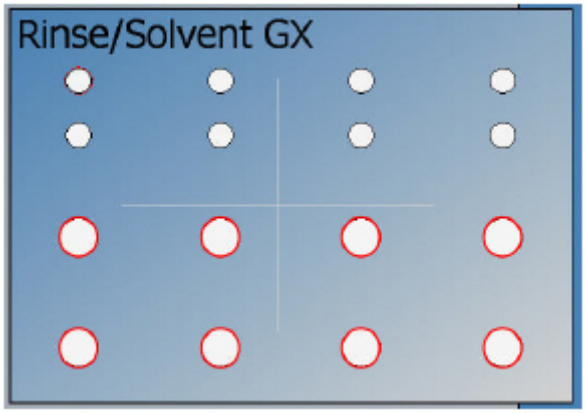
Rinse/Solvent GX (Rack)



Flow-Through Rinse Locations
(Top Wells)



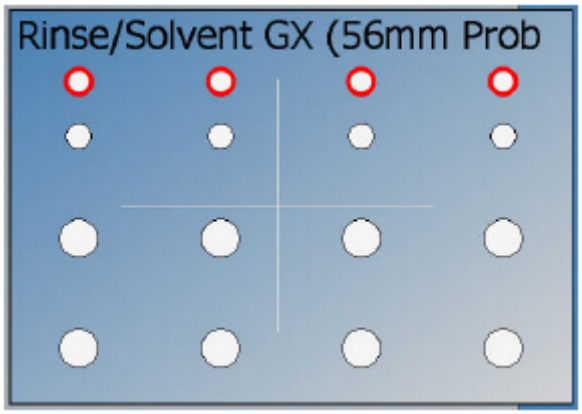
Inside Rinse Locations
(Second Row of Wells from Top)



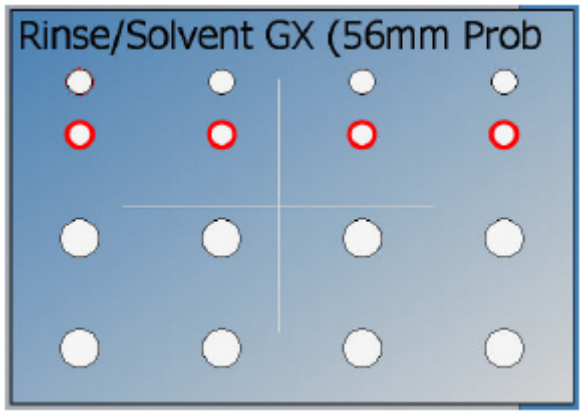
Solvent/Transfer Ports
(Bottom Two Rows of Wells

In a task, select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2)

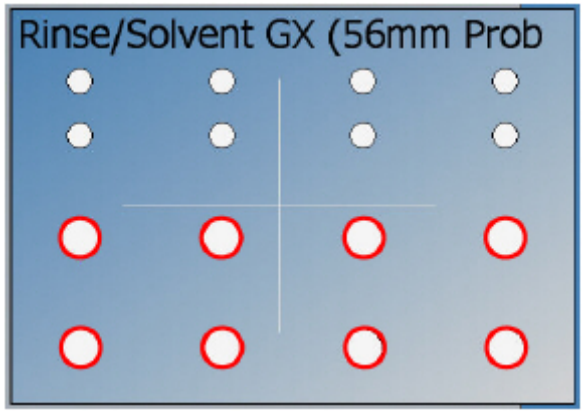
Rinse/Solvent GX (56mm Probes) (Rack)



Flow-Through Rinse Locations
(Top Wells)



Inside Rinse Locations
(Second Row of Wells from Top)



Solvent/Transfer Ports
(Bottom Two Rows of Wells)

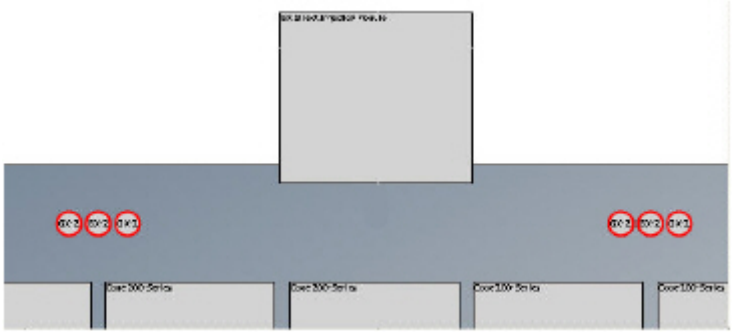
In a task, select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2)

GX-281 Liquid Handlers

Bed Layout Tray (Template)

GX-281

GX Rinse Stations (Footprints)



GX Rinse Stations

Drain/Rinse Station GX Extra Tall (Rack)

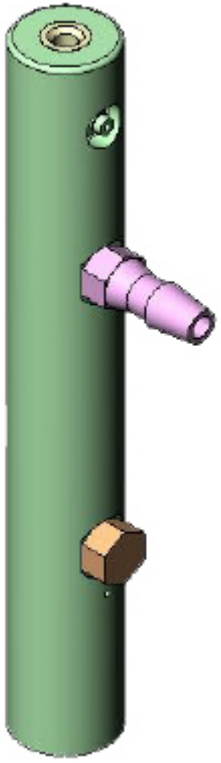
USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	210	26034556

Drain/Rinse Station GX Tall (Rack)

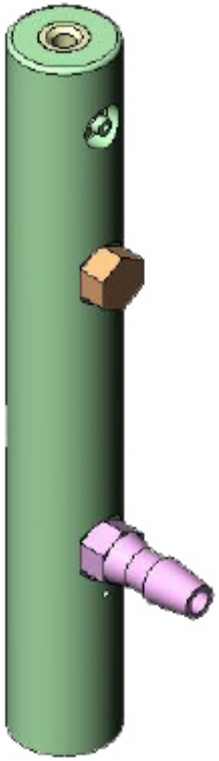
USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	175	26034555

Drain/Rinse Station GX Short (Rack)

Drain/Rinse Station for Inside Rinse of Probe



Rinse Station for Outside Rinse of Probe (Static)



Rinse Station for Outside Rinse of Probe (Flowing)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Inside Rinse	125	26034554

Rinse Station GX Extra Tall (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	210	26034553

Rinse Station GX Tall (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	175	26034551

Rinse Station GX Short (Rack)

USE	Z CLAMP HEIGHT (MM)	RINSE STATION PART NUMBER
Outside Rinse (static or flowing)	125	26034552

COMMANDS

List of Commands

The Commands palette lists the available commands. Commands are used to build tasks. Commands cannot be created, modified, or deleted. For a description of the properties for a command, click a link below.

COMMAND NAME			
Aspirate Air Gap	Home Syringes	Move to Well	Run Executable
Aspirate Z-Inject	Home Valvemate	Move to XY with Offset	Scan Bar Codes
Aspirate	Initialize Mobile Rack	Move to XY	Set Injection Valve Position
Dispense Air Gap	Input Contact Status with Variable	Move Z	Set Valvemate Position
Dispense	Input Contact Status	Output Contact Close	Sound
DispenseInject	LL Seek	Output Contact Open	Stop Application Run
Eject Tips	LLD Sensitivity	Output Contact Pulse	Synchronize
Get Current Held Volume	LLD with Variable	Output Contact Status with Variable	Transfer Port Off
Get Max Holding Volume	LLD	Output Contact Status	Transfer Port On
Get Rack Properties	Load Tips	Prime	UnLock Front Panel
Get Target Properties	Lock Front Panel	Probe Spacing	Update Mobile Well Location
Get Well Properties	Log Message	Prompt for Input	Voltage Off
GSIOC with ID	Move Delta	Prompt	Voltage On
GSIOC	Move Mobile Rack to Collect	Read Display	Wait for Change in Contact State
Halt Syringes	Move Mobile Rack to Drain	Read Valvemate Position with Variable	Wait for Contact State
Home Probes	Move Mobile Rack to Well	Read Valvemate Position	Wait with Display
Home Pump	Move to Well with Offset	Rinse Pump (GX)	Wait
			Write to Display

Aspirate

This command aspirates the specified amount of Sample Volume and Extra Volume.

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	The syringe(s) with which the Sample Volume is aspirated.	ALL
Valve Position	The desired position of the dilutor valve. Select Gas, Probe, or Reservoir.	PROBE
Sample Volume	The amount of sample to aspirate. This volume cannot exceed the syringe 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(s).	1.5 mL/min
Use LLF	Used only when PROBE is selected for the Valve Position. Select TRUE and the probe will follow the liquid down as it is aspirated. Initial volumes should be set in the sample list or LLD should also be used when using LLF. 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.

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	The syringe(s) with which the Air Gap Volume is aspirated.	ALL
Air Gap Volume	The quantity of an air gap.	100 µL
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe(s).	0.3 mL/min

Aspirate Z-Inject

This command draws aspirates the specified amount of Sample Volume and Extra Volume. It is intended for to be used for aspirating into a 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	The syringe(s) with which the Sample Volume and Extra Volume are aspirated.	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(s).	1.5 mL/min
Use LLF	Used only when PROBE is selected for the Valve Position. Select TRUE and the probe will follow the liquid down as it is aspirated. Initial volumes should be set in the sample list or LLD should also be used when using LLF. Select FALSE and the probe will not follow the liquid down as it is aspirated.	FALSE

Dispense

This command dispenses the specified amount of 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	The syringe(s) with which the Sample Volume is dispensed.	ALL
Sample Volume	The amount of sample to dispense. This volume cannot exceed the syringe capacity.	100 µL
Extra Volume	An additional volume to the Sample 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 Sample Volume.	0 µL
Flow Rate	The speed at which the volume moves into the probe(s).	1.5 mL/min
Use LLF	Used only when PROBE is selected for the Valve Position. Select TRUE and the probe will follow the liquid up as it is dispensed. Initial volumes should be set in the sample list or LLD should also be used when using LLF. 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 dispenses the specified volume of air.

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	The syringe(s) with which the Air Gap Volume is dispensed.	ALL
Air Gap Volume	The quantity of an air gap.	100 µL
Air Gap Flow Rate	The speed at which the Air Gap Volume moves out of the probe(s).	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

DispenseInject

This command dispenses the specified amount of Sample Volume and Extra Volume. It is intended to be used when dispensing to an injection port.

DispenseInject - 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 capacity.	100 µL
Extra Volume	An additional volume to the Sample 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 Sample Volume.	0 µL
Flow Rate	The speed at which the volume moves out of the probe(s).	1.5 mL/min
Use LLF	Used only when PROBE is selected for the Valve Position. Select TRUE and the probe will follow the liquid up as it is dispensed. Initial volumes should be set in the sample list or LLD should also be used when using LLF. 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

Eject Tips

This command ejects tips from the specified liquid handler.

Eject Tips - 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	The probes that the command will affect.	1

Get Current Held Volume

This command queries 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 the current held volume.	0 µL

Get Max Holding Volume

This command queries 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 the max holding volume response.	0 µL

Get Rack Properties

This command queries the software for the dimensions of a rack based on the location of a rack.

Get Rack Properties - 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
Zone Name	The zone in which the target on the rack exists.	Source Zone
Target Number	The number of the target (well) within the zone.	1
Center X Location	The variable that will contain the absolute X position of the center of the rack.	0
Center Y Location	The variable that will contain the absolute Y position of the center of the rack.	0
Height	The variable that will contain the height of the rack. The height is the measurement from the bottom of the rack to the top of the rack (not to the rack handles or to the top of the vessels).	0
Length	The variable that will contain the length of the rack. The length of the rack is the measurement across the front of the rack.	0
Width	The variable that will contain the width of the rack. The width of the rack is the measurement from the front to the back of the rack.	0
Left X Location	The variable that will contain the absolute X position of the left side of the rack.	0
Right X Location	The variable that will contain the absolute X position of the right side of the rack.	0
Front Y Location	The variable that will contain the absolute Y position of the front of the rack.	0
Back Y Location	The variable that will contain the absolute Y position of the back of the rack.	0

Top Z Location	The variable that will contain the absolute Z position of the top of the rack.	0
Bottom Z Location	The variable that will contain the absolute Z position of the bottom of the rack.	0
Shape	The variable that will contain the name of the shape of the rack.	0

Get Target Properties

This command queries the software for the properties of a specified target.

Get Target Properties - 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
Zone Name	The zone in which the target on the rack exists.	Source Zone
Target Number	The number of the target within the zone.	1
Absolute X Location	The variable that will contain the absolute X position of the target.	0
Absolute Y Location	The variable that will contain the absolute Y position of the target.	0
Absolute Z Location	The variable that will contain the absolute Z position of the target.	0

Get Well Properties

This command queries the software for the properties of a specified well.

Get Well Properties - 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
Zone Name	The zone in which the well on the rack exists.	Source Zone
Well Number	The number of the well within the zone.	1
Absolute X Location	The variable that will contain the absolute X position of the center of the well.	0
Absolute Y Location	The variable that will contain the absolute Y position of the center of the well.	0
Absolute Z Location	The variable that will contain the absolute Z position of the center of the well.	0
Inner Height	The variable that will contain the inner height of the well.	0
Outer Height	The variable that will contain the outer height of the well.	0
Shape	The variable that will contain the name of the shape of the well.	0
Inner Diameter	The variable that will contain the inner diameter of the well.	0
Outer Diameter	The variable that will contain the outer diameter of the well.	0
Inner Length	The variable that will contain the inner length of the well.	0
Outer Length	The variable that will contain the outer length of the well.	0
Inner Width	The variable that will contain the inner width of the well.	0
Outer Width	The variable that will contain the outer width of the well.	0
Volume	The variable that will contain the maximum volume of the well.	0

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 to an immediate command 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 to an immediate command coming from the instrument.	

Home Probes

This 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 a GX Solvent System.

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 a 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 on a 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

Initialize Mobile Rack

This command initializes the mobile rack and positions it above the drain.

Initialize Mobile Rack - 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
Mobile Rack Zone Name	The name of the zone assigned to the mobile rack.	

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 the input contact status response coming from the instrument.	

LL Seek

This command moves the probe on the specified instrument to the Z Option and Z Target unless the liquid detector stops it first.

This command is used in 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 also be achieved through the LLF command.
- To aspirate only after confirming the presence of the sample in the well.

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	The probes that the command will affect.	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 six defined reference points, selected from a drop-down list. **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). **Auto Calculate**: Places the probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Target. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Z Target to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Z Target value to move up from the bottom. **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 Source Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Absolute Value

Touch Off	Select ON to perform a touch off on the side of the well. Select OFF for no touch off.	Off

LLD

This command determines whether liquid has been detected (returns TRUE if liquid is detected and FALSE if air is detected). This command should be used after the LL Seek command.

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	The probes that the command will affect.	ALL

LLD Sensitivity

This command detects liquid when 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	The probe(s) that the command will affect.	ALL
Sensitivity	Sensitivity is used to detect the liquid level when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. The default setting of 1 works well for most applications.	0

LLD with Variable

This command determines whether liquid has been detected (returns TRUE if liquid is detected and FALSE if air is detected). This command should be used after the LL Seek command.

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	The probe(s) that the command will affect.	ALL
Read in Variable	Used as a variable for the LLD status response coming from the instrument.	

Load Tips

This command loads tips on a specified liquid handler.

Load Tips - 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	The probe(s) that the command will affect.	ALL

Lock Front Panel

This command inhibits the use of the 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.	

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 should be used following a Move to Well command and 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	The probe to reference for the required X and Y displacement.	ALL

Move Mobile Rack to Collect

This command moves the mobile rack (Mobile Rack Zone Name) over the collect position.

Move Mobile Rack to Collect - 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
Mobile Rack Zone Name	The name of the zone assigned to the mobile rack.	

Move Mobile Rack to Drain

This command moves the mobile rack (Mobile Rack Zone Name) over the drain position.

Move Mobile Rack to Drain - 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
Mobile Rack Zone Name	The name of the zone assigned to the mobile rack.	

Move Mobile Rack to Well

This command positions the specified source well and zone of the mobile rack over the specified destination well and zone.

Move Mobile Rack 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
Source Zone Name	The name of the zone assigned to the mobile rack.	
Source Well Number	The well on the mobile rack to position over the Destination Well.	
Destination Zone Name	The name of the zone over which the Source Zone will be positioned.	
Destination Well Number	The well in the zone over which the Source Well will be positioned.	

Move to Well

This command moves the arm 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	The probe(s) that the command will affect.	ALL
Zone Name	The name of the zone to move to.	Source Zone
Well Number	The number of the well in the zone.	1
Move Option	Select to move to the center or to the edge of the well.	Center

Move to Well with Offset

This command moves the arm a specified distance (X Offset and Y Offset) from the specified well in the specified zone.

Move to Well with Offset - 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	The probe(s) that the command will affect.	ALL
Zone Name	The name of the zone to move to.	Source Zone
Well Number	The number of the well in the zone.	1
X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the center of the well.	0
Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from the center of the well.	0

Move to XY

This command moves the arm to an absolute X and 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.	100 mm
Y Target	Specify the absolute Y value.	100 mm
Reference Probe	The probe to reference for the X and Y values.	ALL

Move to XY with Offset

This command moves the arm a specified distance (X Offset and Y Offset) from a specified absolute X and Y value.

Move to XY with Offset - 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.	100 mm
Y Target	Specify the absolute Y value.	100 mm
X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the absolute X value.	0
Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from the absolute Y value.	0
Reference Probe	The probe to reference for the X and Y values.	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	The probe(s) that the command will affect.	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 six defined reference points, selected from a drop-down list. **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). **Auto Calculate**: Places the probe into well and at the liquid level using the initial volume from the sample list and well dimensions from the bed layout; accepts a positive (+) or negative (-) value for the Z Target. **Top**: Moves the probe to the Z Safe Height; enter a negative (-) value for the Z Target to move down. **Tube Bottom**: Moves the probe to the well bottom as defined by the bed layout; enter a positive Z Target value to move up from the bottom. **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 Target. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Absolute Value
Touch Off	Select ON to perform a touch off on the side of the well. Select OFF for no touch off.	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 output contact 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 output contact 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 the output contact status 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 and out of 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

Probe Spacing

This command sets the spacing between the probes of a Quad-Z 215.

Probe Spacing - 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
Spacing Between Probes	Enter a value between 9.0 and 18.0.	9 mm

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 displays a prompt dialog with the selected message and allows for entering a value.

This command can be used in an expression. During a 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 prompt input.	

Read Display

This command reads the message on the front panel display of the specified instrument and then records it in the log.

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 the front panel display 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 the Valvemate position response coming from the instrument.	

Rinse Pump (GX)

This command controls the GX Rinse Pump.

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 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 TRILUTION LH waits for the external program to close before executing the next command. Select OFF and the external program is started and then the next command is executed immediately.	ON
Path and Name	The file path of the external program to run.	
Command Line Parameters	The information sent to the program located at the Path and Name (optional).	

Scan Bar Codes

This command is used to scan bar codes on racks when the liquid handler is a GX-281 Liquid Handler with Bar Code Reader.

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

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	For the GX-281, enter 2 for the Left GX Direct Injection Module or 3 for the Right GX Direct Injection Module.	1

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 instrument that the command will affect.	#Valvemate
Position	Desired position of the valve on the VALVEMATE II.	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

Sound

This command causes the specified instrument to beep for 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	The length of time the beep will sound.	0.016 min

Stop Application Run

This command forces the 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.	

Synchronize

This command is used to coordinate commands in a task.

Synchronize - Properties

PROPERTY NAME	BRIEF DESCRIPTION	DEFAULT VALUE
Instrument Name	The instrument that the command will affect.	#Instrument
Type	The command type.	

Transfer Port Off

This command switches the valve that controls flow through the transfer ports off.

Transfer Port 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
Transfer Port	The transfer ports that the command will affect. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

Transfer Port On

This command switches the valve that controls flow through the transfer ports on.

Transfer Port On - 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
Transfer Port	The transfer ports that the command will affect. Select A for the rear transfer ports (solvent 1) or B for the front transfer ports (solvent 2).	A

UnLock Front Panel

This command enables use of the front panel on the specified instrument 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

Update Mobile Well Location

This command tells the software that a mobile well has been moved.

Update Mobile Well Location - 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
Source Zone Name	The name of the zone that contained the mobile well in its original position.	
Source Well Footprint Number	The well footprint that contained the mobile well in its original position.	1
Destination Zone Name	The name of the zone to which the mobile well was moved.	
Destination Well Footprint Number	The well in the Destination Zone to which the mobile well was moved.	1

Voltage Off

This command opens and powers off a specified 12V or 24V 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	The contact to act on for the liquid handler selected.	1

Voltage On

This command opens and powers on a specified 12V or 24V 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
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 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 wait time has elapsed. Select FALSE to inhibit beeping while waiting for the wait time to elapse.	FALSE
Message	Enter the text to display in the message box.	
Show Dialog	Select TRUE to display the message box while the wait time elapses. Select FALSE and a message box will not be displayed while the wait time elapses.	True
Show Button	Select TRUE to display and enable a CONTINUE button on the message box. This provides a way to skip the wait time and continue the run. Select FALSE and a CONTINUE button will not be displayed in the message box.	True

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.	A
Alarm	Select TRUE and the computer will beep while waiting to detect the contact state change. Select FALSE to inhibit beeping while waiting to detect the contact state change.	FALSE
Message	Enter the text to display in the message box.	
Show Dialog	Select TRUE to display the message box while waiting to detect the contact state change. Select FALSE and a message box will not be displayed while waiting to detect the contact state change.	True
Show Button	Select TRUE to display and enable a CONTINUE button on the message box. This provides a way to skip the wait and continue the run. Select FALSE and a CONTINUE button will not be displayed in the message box.	True

Wait for Contact State

This command initiates a wait in the method until a specific input contact state is detected 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.	A
Alarm	Select TRUE and the computer will beep until the specified contact state is detected. Select FALSE to inhibit beeping while waiting for the specified contact state to be detected.	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.	On
Show Dialog	Select TRUE to display the message box while waiting to detect the specified contact state. Select FALSE and a message box will not be displayed while waiting to detect the specified contact state .	True
Show Button	Select TRUE to display and enable a CONTINUE button on the message box. This provides a way to skip the wait and continue the run. Select FALSE and a CONTINUE button will not be displayed in the message box.	True

Wait with Display

This command initiates a wait in the method until the front panel display of the specified instrument matches the specified message.

This command can be used for synchronization between an injector program and TRILUTION. During the run, TRILUTION enters a wait state until the indicated message appears on the front panel of the Instrument. 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 to detect the display message.	FALSE
Show Dialog	Select TRUE to display the message box while waiting to detect the display message. Select FALSE and a message box will not be displayed while waiting to detect the display message.	True
Show Button	Select TRUE to display and enable a CONTINUE button on the message box. This provides a way to skip the wait and continue the run. Select FALSE and a CONTINUE button will not be displayed in the message box.	True

Write to Display

This command displays a message on 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
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.	
Line Number	For two-line displays, indicate the line on which to display the message.	1

CUSTOM 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 Custom Task Builder. When a new task is saved, it is listed in the Tasks palette in the Custom folder.

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 Custom Task Builder by:

- clicking **Task** from the Liquid Handling menu.
- right-clicking on a task in a method and then selecting **Open Task**.

Key concepts to learn about the Custom Task Builder are:

- How to Create a Task
- How to Export Tasks
- How to Import Tasks

Custom Task Builder Window

CUSTOM TASK BUILDER WINDOW

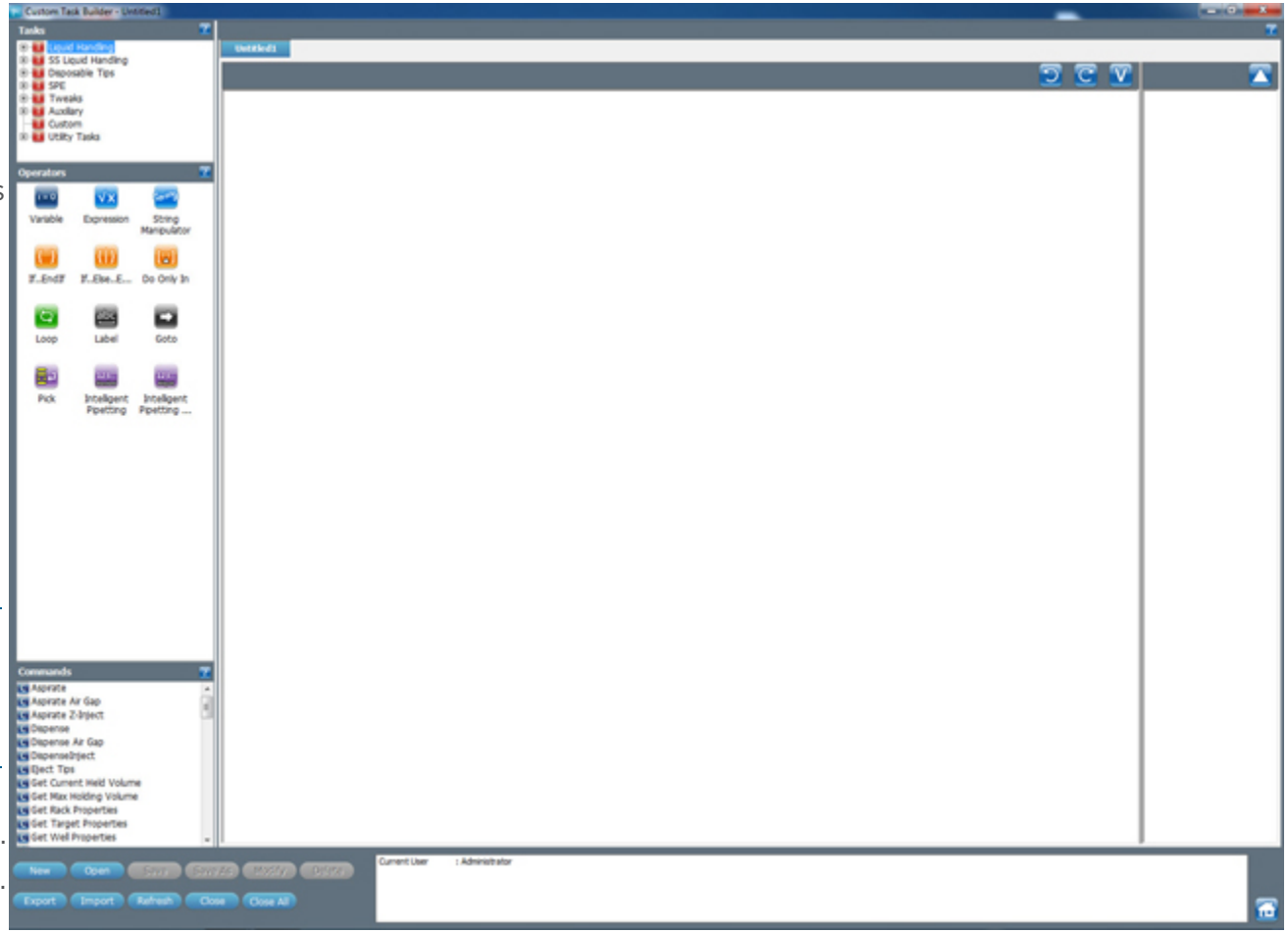
The Custom Task Builder is a graphical user interface used to build a task.

The Custom Task Builder window includes the following:

- Tasks Palette
- Operators Palette
- Commands Palette
- Workspace
- Action Buttons
- Info Window

Use the Custom Task Builder to:

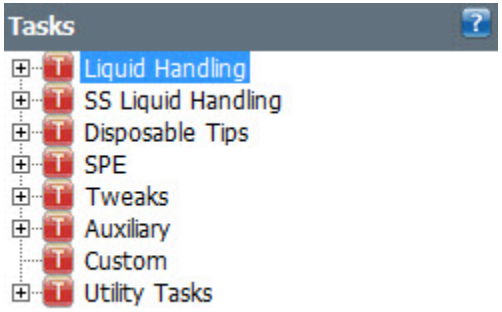
- Create new tasks; see How to Create a Task.
- Modify existing tasks; see Modify a Task.
- Permanently delete tasks; see Delete a Task.
- Export tasks; see How to Export Tasks.
- Import tasks; see How to Import Tasks.



TASKS PALETTE

The Tasks palette lists the saved (custom) tasks and pre-defined, Gilson-supplied tasks.

For descriptions of Gilson-supplied tasks, see Tasks - Auxiliary, Tasks - Disposable Tips, Tasks - Liquid Handling, Tasks - SPE, Tasks - SS Liquid Handling, Tasks - Tweaks, and Tasks - Utility Tasks.

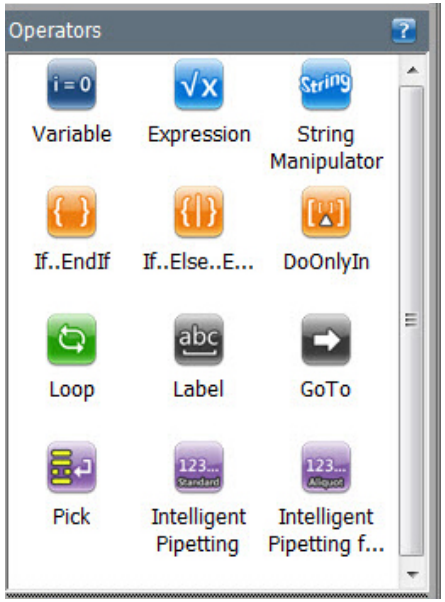


OPERATORS PALETTE

The Operators palette lists the operators, variables, and expressions.

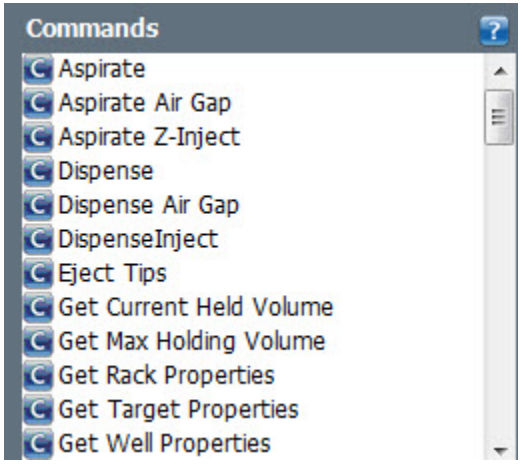
For more information about variables, see Working with Variables.

For more information about operators and expressions, see 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, see List of Commands.



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

Provides quick access to some options available in the Custom Task Builder window.

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, see 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 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 task 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	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.

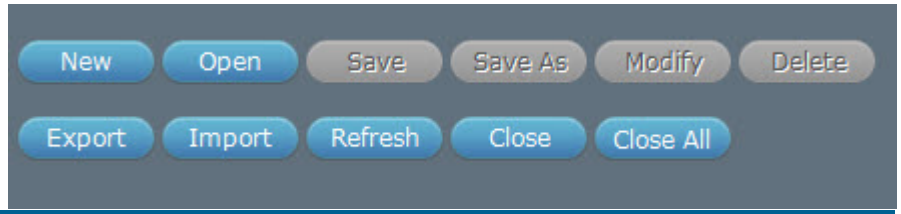
Workspace

Right-click in the workspace to display the following menu options:

MENU	DESCRIPTION
Paste	Places a cut or copied task in the workspace, in an operator or expression, or in another method.
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.

ACTION BUTTONS

The following action buttons are located in the lower left corner of the Custom Task Builder.



ACTION BUTTON	DESCRIPTION
New	Create a new task. For more information, see How to Create a Task.
Open	Open an existing task. For more information, see View a Task.
Save	Save an existing task to the same name. Optionally, type a description and/or choose a custom icon to represent the task in the method. For more information, see Save a Task.
Save As	Save a new task or save an existing task to a new name. Optionally, type a description and/or choose a custom icon to represent the task in the method.
Modify	Modify the description or custom icon for the task.
Delete	Deletes the open task or all versions of the task. For more information, see Delete a Task.
Export	Exports selected tasks to a specified location as .LHTE files. For more information, see How to Export Tasks.
Import	Imports .LHTE files, lists the tasks in the Tasks palette, and replaces imported tasks in methods. For more information, see How to Import Tasks.
Refresh	Reloads the Tasks palette with any new tasks created.
Close	Closes the open task while leaving the Custom Task Builder open.
Close All	Closes all open tasks while leaving the Custom Task Builder open.

INFO WINDOW

Lists information about the open task (if applicable) and the name of the current user.

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, see 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, see Tasks - Auxiliary, Tasks - Disposable Tips, Tasks - Liquid Handling, Tasks - SPE, Tasks - SS Liquid Handling, and Tasks - Tweaks.
- From the Operators palette, drag an expression, variable, or operator and then drop it in the workspace.

  For more information about variables, see Working with Variables.

  For more information about operators and expressions, see Operators.

Optionally, use the Property Page Creator to create a task property page for the custom task.

View a Task

In the Custom 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 the following:

- Adding tasks, commands, or operators to the workspace.
- Deleting tasks, commands, or operators from the workspace.

  Commands, tasks, 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, do the following:
   a) In the **Name** field, type a unique Task name.
   b) In the **Description** field (optional), type a brief description of the Task.
   c) In the **Custom Icon** field (optional), use the browse button  to assign a custom icon.
   d) Click **OK**. The task is saved and listed under Custom in the Tasks palette.

NOTE	The use of some special characters in names and descriptions is not allowed. The software prevents use of these characters.

How to Export Tasks

1 In the Task builder, click **Export** to display the Select items to Export window.
2 In the Select items to Export window, do the following:
   a) In the **Select the items to be exported** field, select the tasks.
   b) In the Select a path field, do one of the following:
      - Accept the default path of **C:\Documents and Settings\OS User Name\Documents\TRILUTION LH x.x\Export**.
      - Click the browse icon 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 an .LHTE extension.

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

4 When the export success/fail dialog appears, do the following:
   - To view the log information of the export operation, click **Details**.
   - Click **OK**.

How to Import Tasks

1 In the Custom Task Builder, click **Import**. The Select Task Exported Files window appears.
2 From the Select Task Exported Files window, complete the following:
   a) Browse for and select the Task Exported file(s).
   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. The imported tasks are saved to the Custom folder in the Custom Task Builder and Method Builder.
3 When the import success/fail dialog appears, do the following:
   - To view the log information of the import operation, click **Details**.
   - Click **OK**.

Delete a Task

1 On the Tasks palette, do one of the following:
- Select a Task and right-click to view the submenu. On the submenu, click **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 OPEN TASKS

To close the task that is open in the workspace, click **Close**.

CLOSE ALL OPEN TASKS

To close all open tasks, but leave the Custom Task Builder open, click **Close All**.

CLOSE THE TASK BUILDER

To close the Custom Task Builder, click  on the upper right corner of the Custom Task Builder.

BED LAYOUT AND UTILITIES

Bed Layout and Utilities

Access the Bed Layout and Utilities by choosing **Liquid Handling|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

CUSTOM TEMPLATES

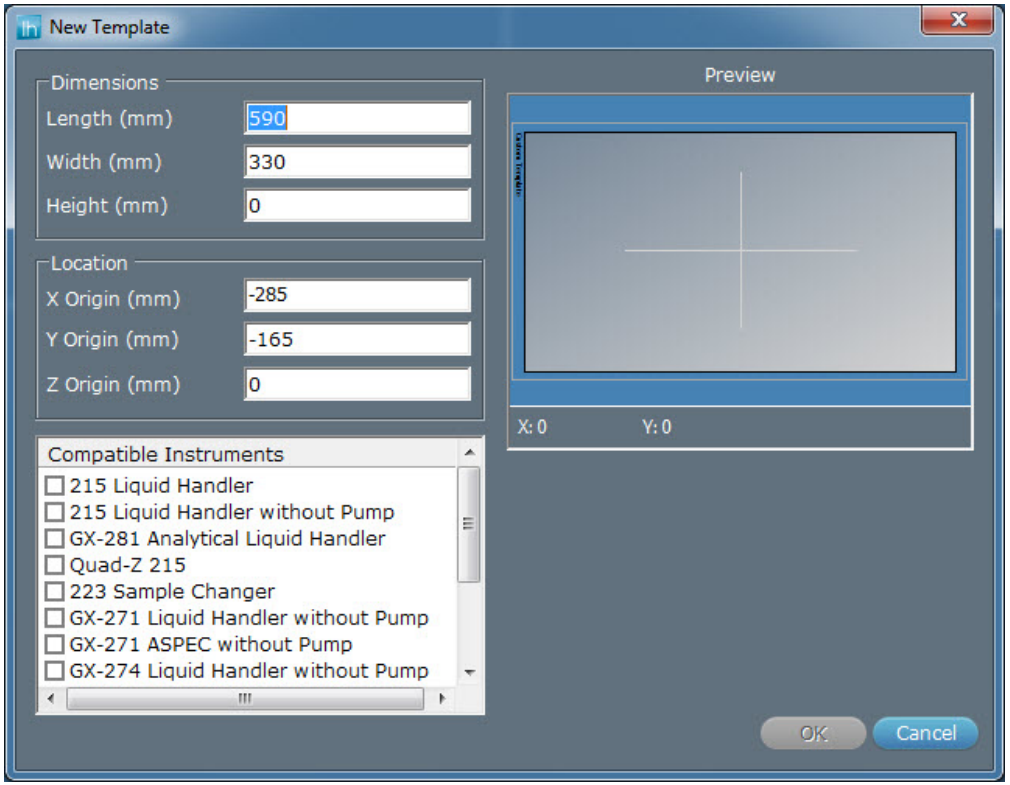
TRILUTION allows for using pre-defined templates or creating a custom template with footprints. When creating a custom template, the software requires information about the physical dimensions of the template and the location of the origin (where 0,0,0 is).

Keywords:

- **Template**: The bottom, required layer of a bed layout. Only footprints can be added to templates. For more information, see How to Create a Template.
- **Origin**: Defined by the user, the location of the coordinates X=0, Y=0, Z=0. For more information, see Origin.
- **Footprint**: A placeholder or area that accepts racks. For more information, see Add 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, tip boxes, and microplates. For more information, see 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.
4 Click **OK**.
5 Add, or create and then add, rack footprints to the template. For more information, see Add 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

The following describes how to add a single rack footprint to a template:

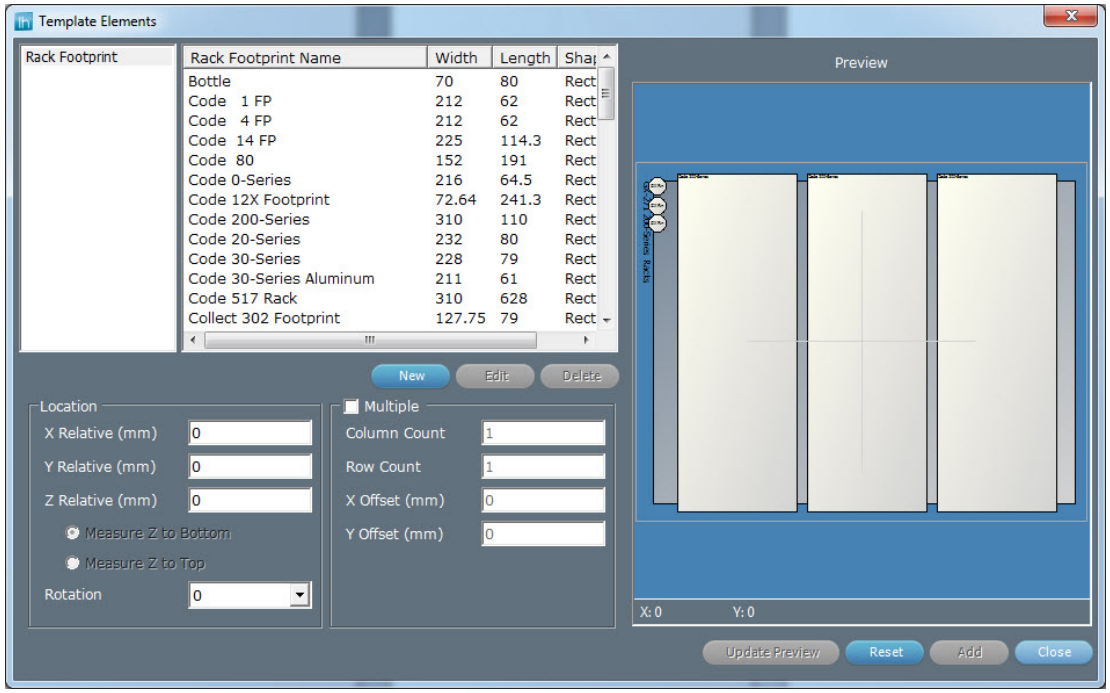
1 Click on the template. It highlights in red.
2 Do one of the following:
   - Click **Add Elements**.
   - Right-click and then select **Add Elements...**.

   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, see 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

The following describes how to add an array of identical rack footprints to a template:

1 Click on the template. It highlights in red.
2 Do one of the following:
   - Click **Add Elements**.
   - Right-click and then select **Add Elements...**.

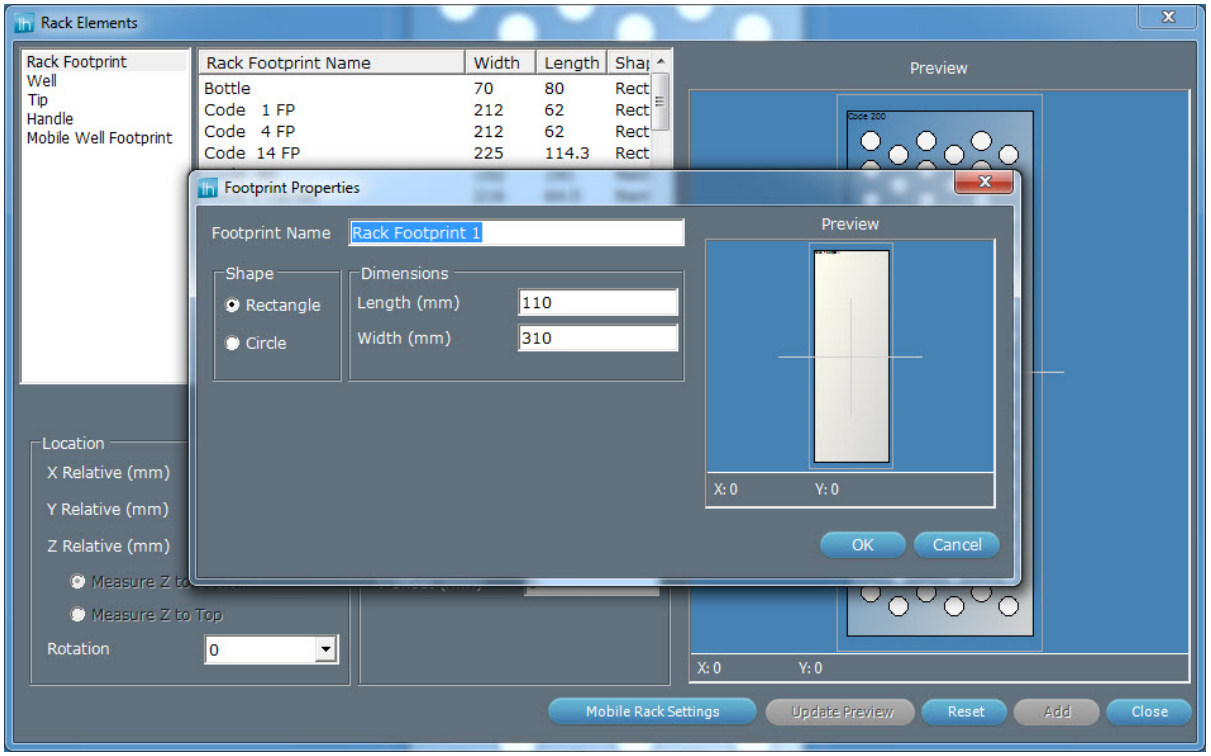
   The Template Elements dialog appears.
3 Select the Rack Footprint to add as an array.
4 Select the **Multiple** check box to enable the necessary fields.
5 Enter the X, Y, and Z Relative positions for the center of the element in column 1, row 1.

   The position is calculated with respect to the origin. For more information, see 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 one 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, see Add Existing Rack Footprints to Template or to add it to a rack, see 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, do the following:

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

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.

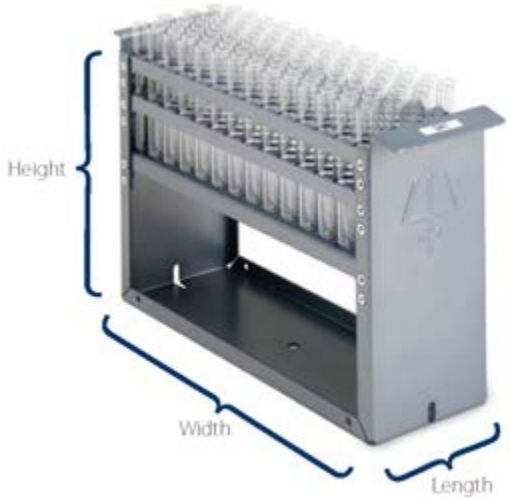
To view the properties of an element, select it, right-click, and then select **Properties...**.

Keywords:

- **Rack**: A rack requires a footprint before it can be added to a template. Examples of racks are racks, rinse stations, tip boxes, and microplates. For more information, see 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, see Add Existing Rack Elements to Rack or Create a New Rack Element.
- **Rack Footprint**: Area that accepts racks. For more information, see Create a Rack Footprint.
- **Well**: Wells can only go in racks. For more information, see Create a Well.
- **Target**: A position defined within a well. Zones can be assigned to a target. For more information, see Create a Target.
- **Template**: The template is the bottom, a required layer of a Bed Layout. Only footprints can be added to templates. For more information, see 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, see 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, see 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, see 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, see Add Existing Rack Elements to Rack.
- **Mobile Well Footprint**: Area that accepts mobile wells.

HOW TO CREATE A RACK

1 Click **New Rack**.. The 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 (Y), and the height.
   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, see 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, see How to Create A Rack.
2 Create and Add Collect Footprint and DEC Footprint
   a) Follow 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, see 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, see 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.

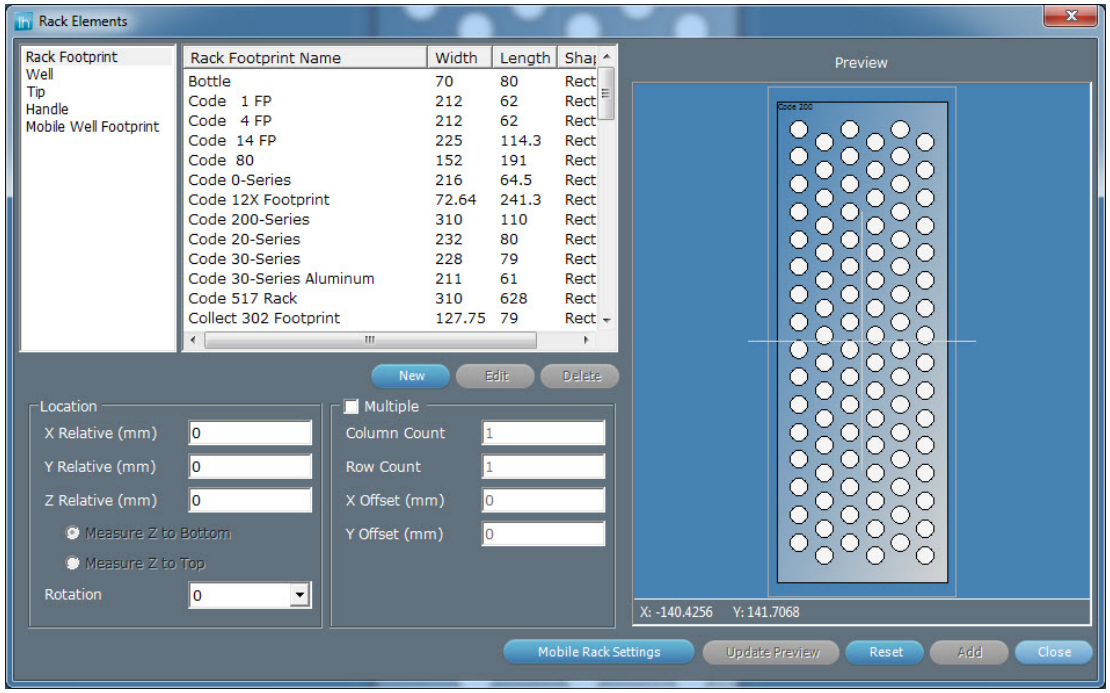
ADD EXISTING RACK ELEMENTS TO RACK

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

This describes how to add a single rack element to a rack.



1 Click on the rack. It highlights in red.
2 Do one 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

This describes how to add an array of identical rack elements to a template.

1 Click on the rack. It highlights in red.
2 Do one 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).

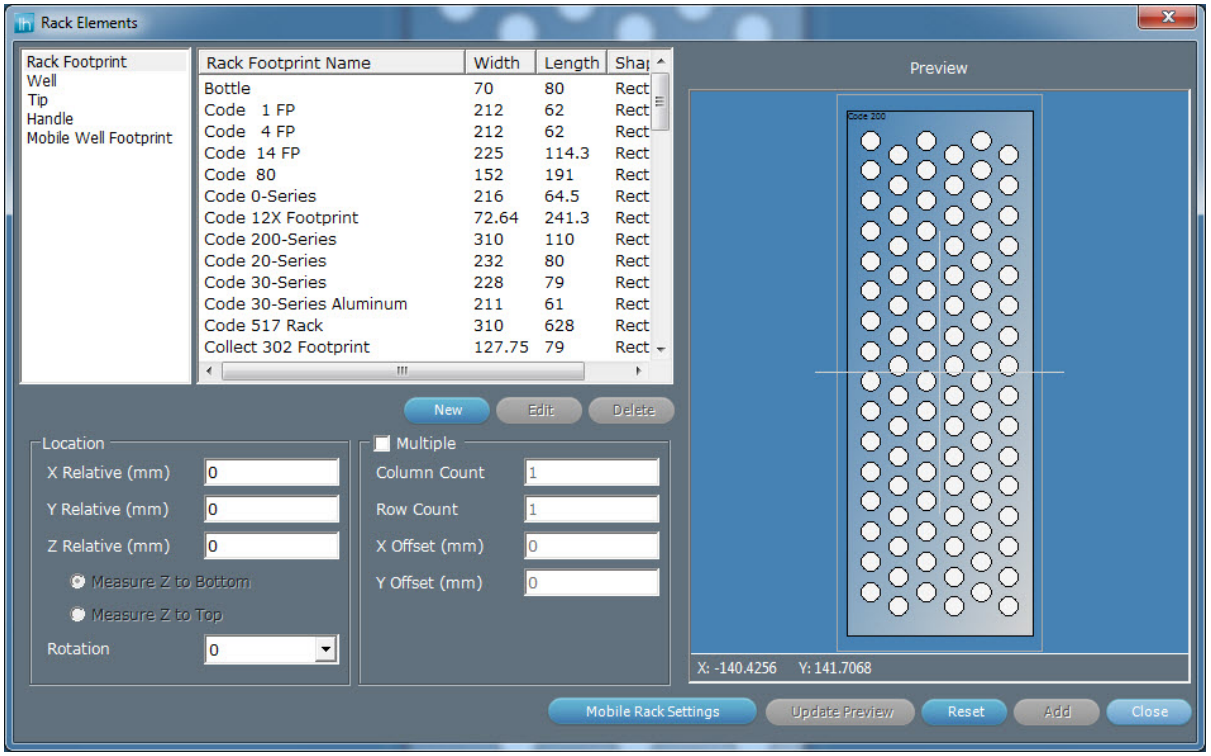
   *When adding a well or tip, additional Z options are available. Choose to Measure Z to Well/Tip Bottom or Measure Z to Well/Tip Top.
6 Specify the number of columns and the number of rows.
7 Specify the distance between wells within a column (X Offset) and the distance between wells within a row (Y Offset).
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 NEW 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 new rack element, see:

- 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, do the following:

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.

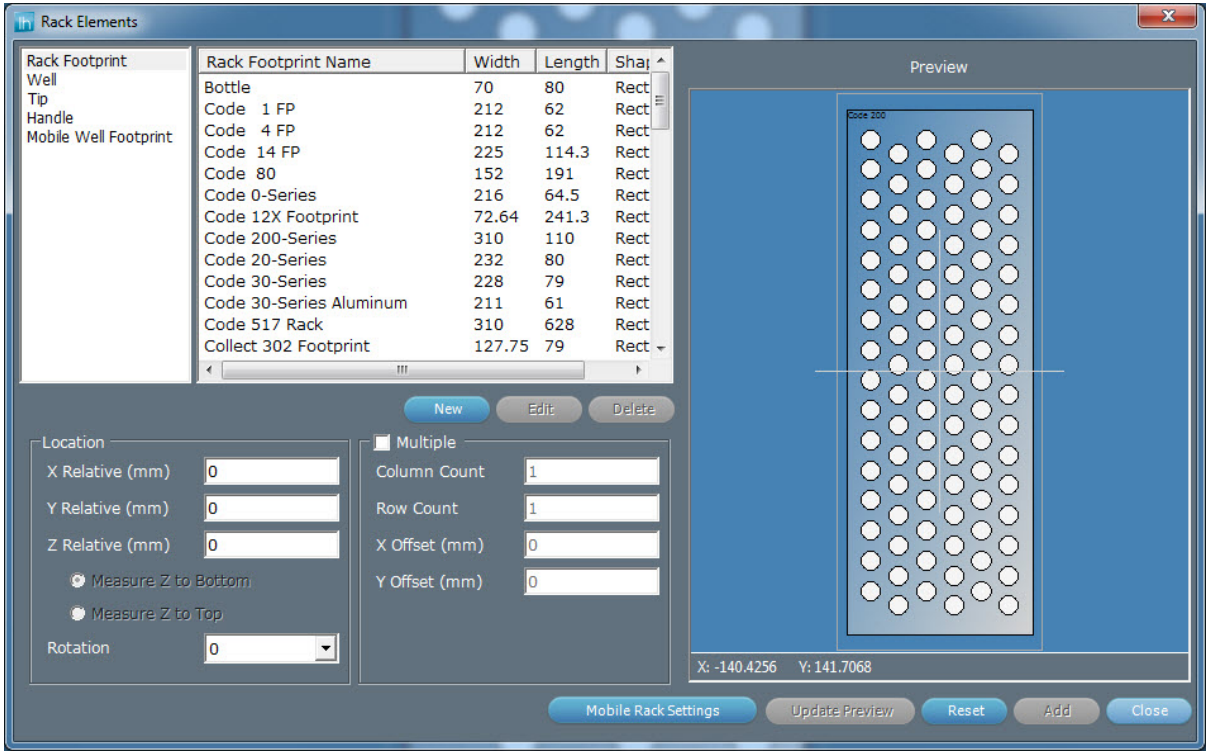
Create a New Rack Element

CREATE A NEW 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 new rack element, see:

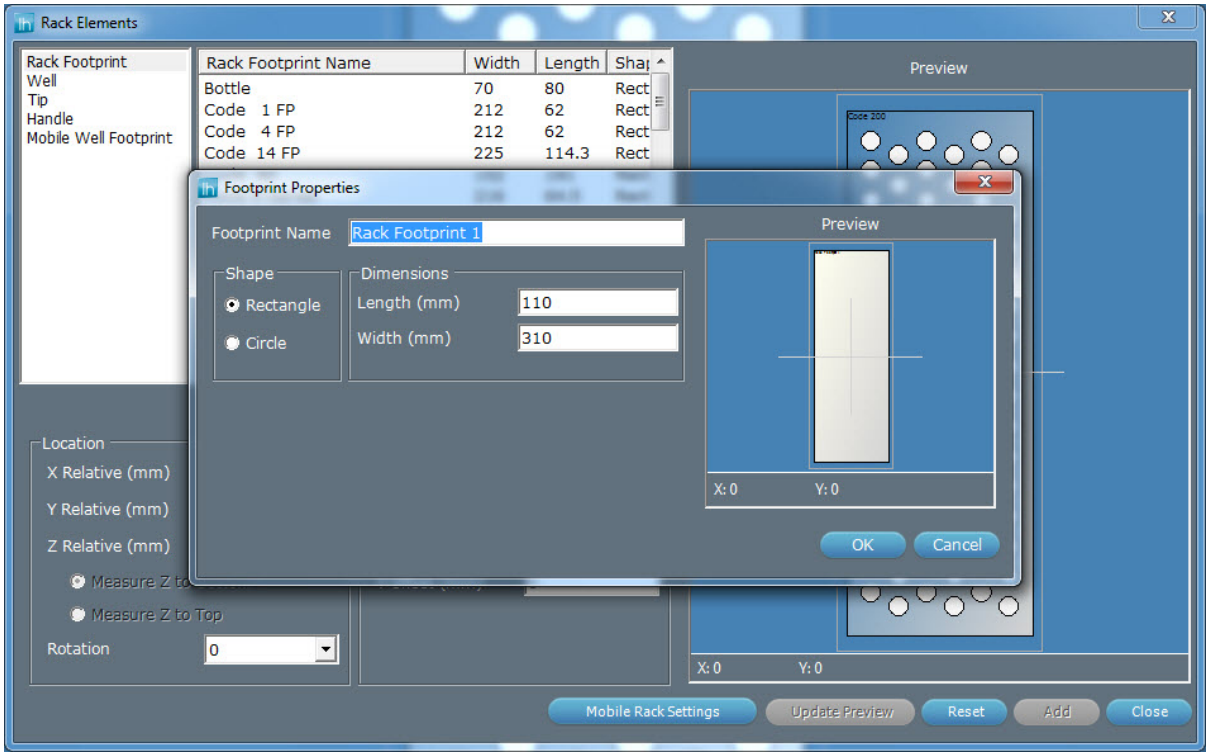
- Create a Rack Footprint
- Create a Well
- Create a Tip
- Create a Mobile Well Footprint



CREATE A RACK FOOTPRINT

1 Click on the rack or template. It highlights in red.
2 Do one 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**.

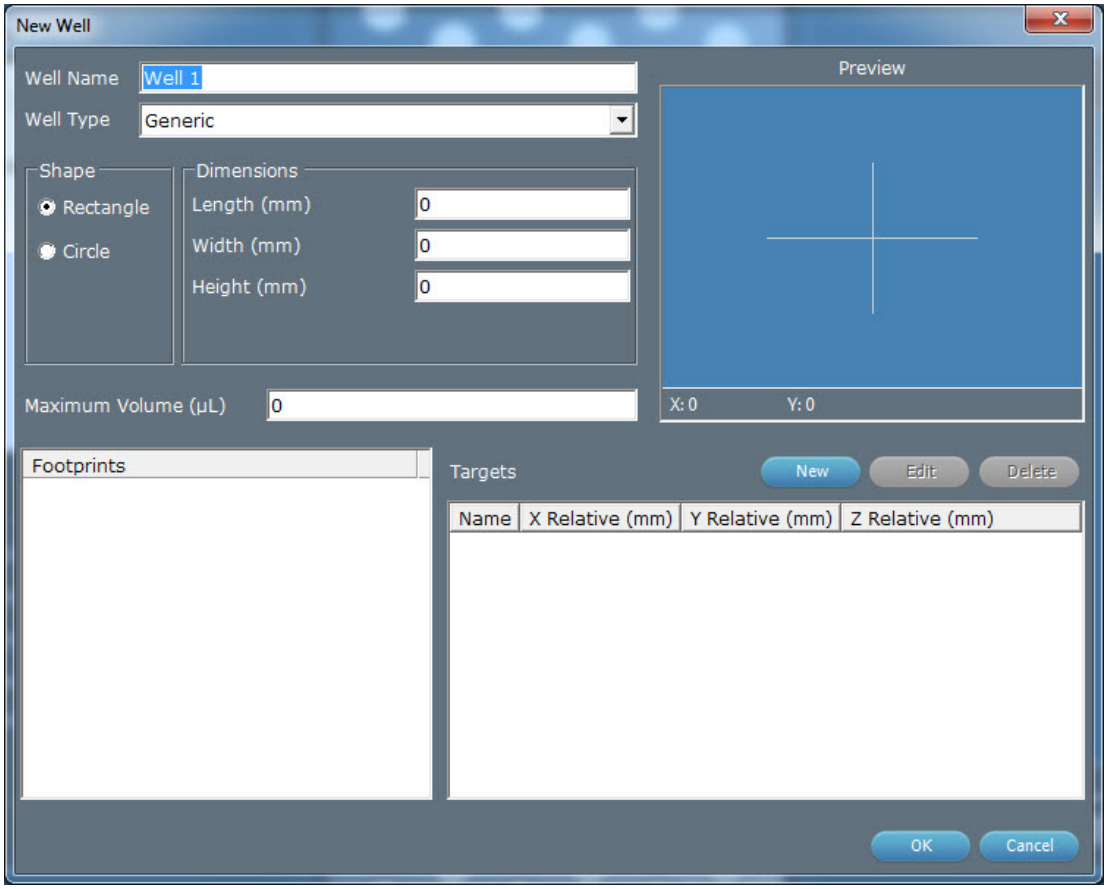
To add the new rack footprint to a template, see Add Existing Rack Footprints to Template or to add it to a rack, see Add Existing Rack Elements to Rack.



CREATE A WELL

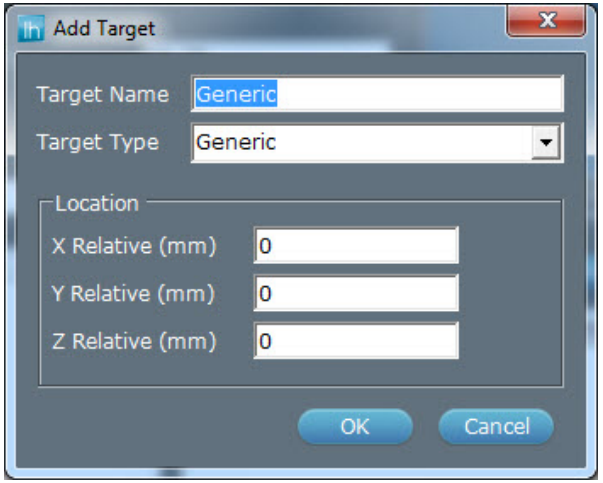
1 Click on the rack. It highlights in red.
2 Do one of the following:
   - Click **Add Elements**.
   - Right-click and then select **Add Elements...**.
3 Click **Well** and then click **New**.
4 Enter a Well Name for the well.
5 Select a Well Type from the drop-down list.
6 Select the Shape: Rectangle 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, see Create a Mobile Well Footprint.
8 Click **OK.**

For information about adding a target within a well, see Create a Target.

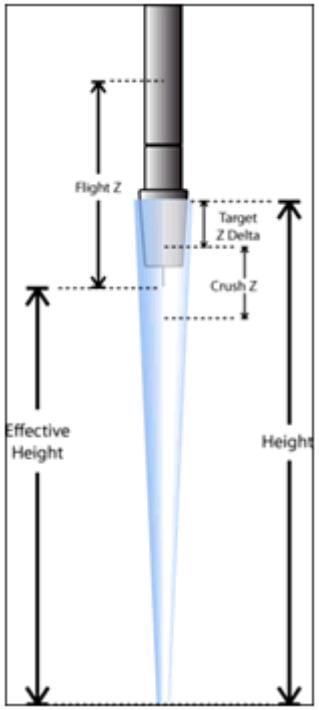


CREATE A TARGET IN A WELL

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 one 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**.

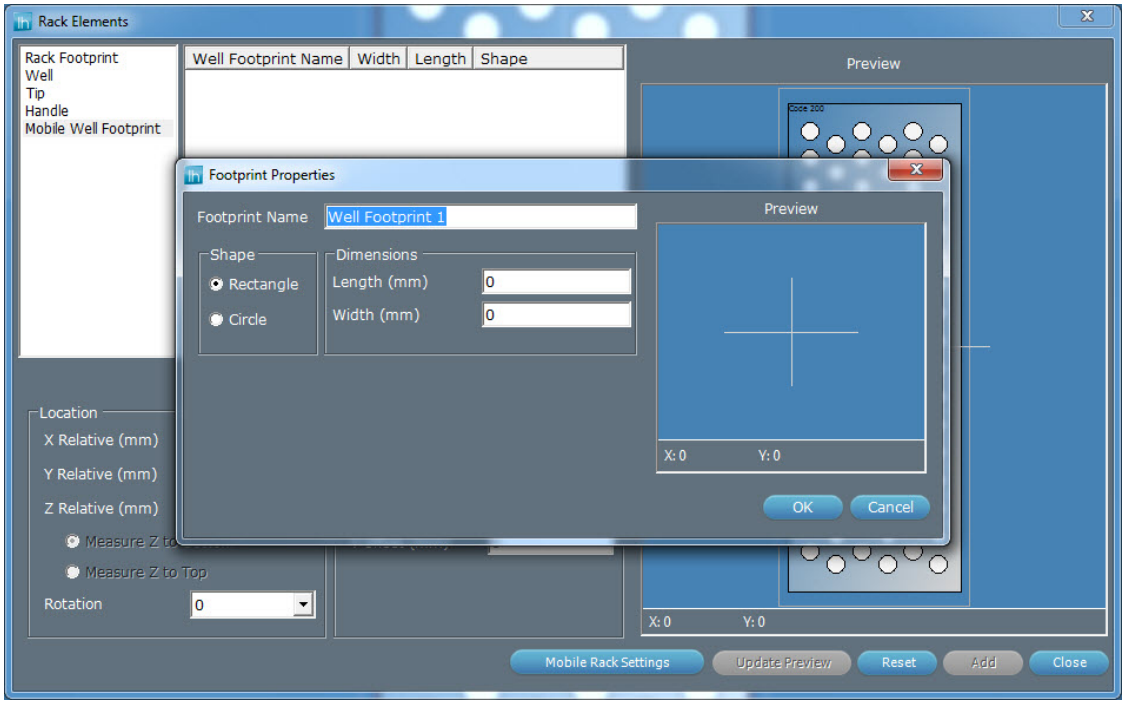
   Tip Flight Z is used to set a height that will allow the bottom of the tip to clear all of the racks, while preventing the tip from being removed when the Move Z Top command is used. While the tip is installed, the Move Z Top command will move to the Z Safe Height – Tip Flight Z. Ejecting the tip will 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 one 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**.



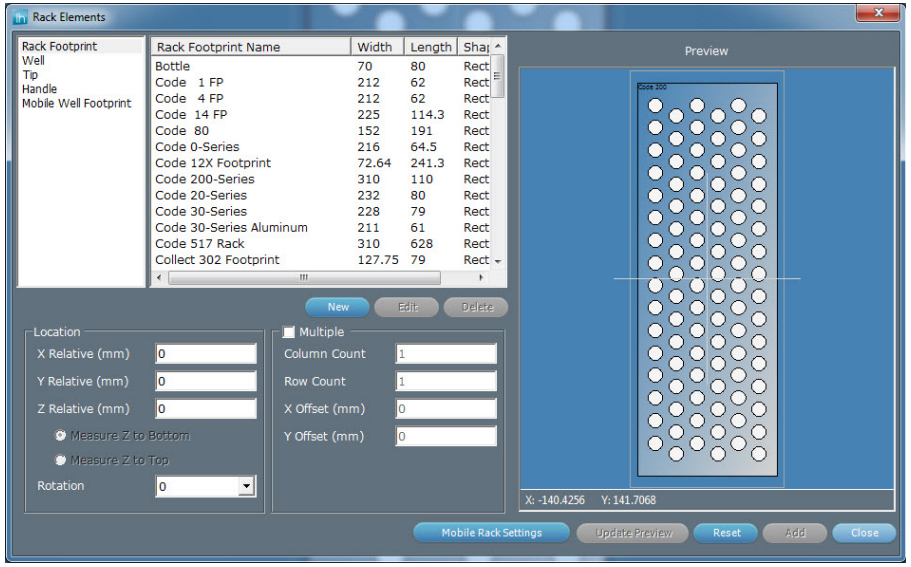
Modify a Rack Element

MODIFY A RACK ELEMENT

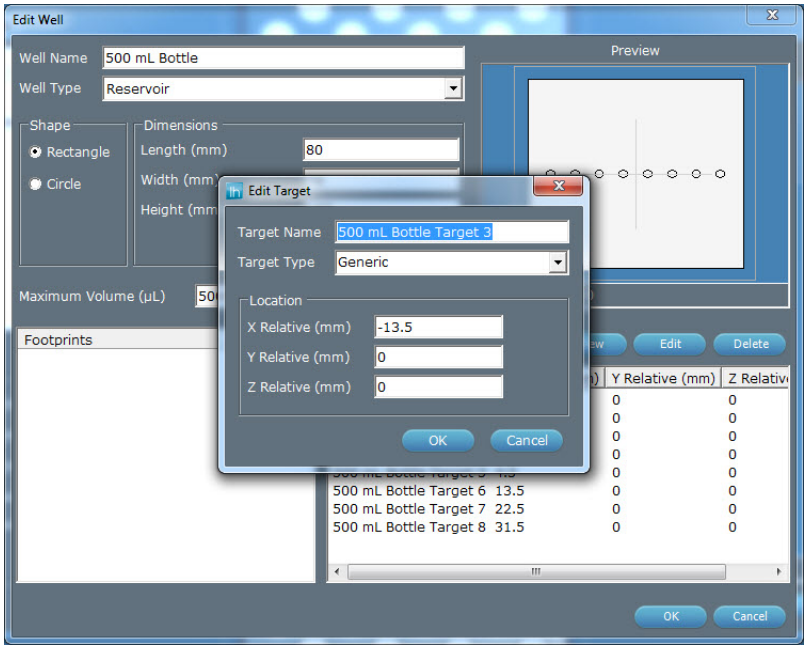
A Gilson-supplied rack element can be modified but must be given a new name. Modifying a Gilson-supplied rack element can be a simple way to create a new rack element.

To modify a rack element, do the following:.

1 Do one 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 one 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

DELETE A RACK ELEMENT

Gilson-supplied rack elements cannot be deleted.

To delete a user-created custom rack element, do the following:

1 Do one 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 one of the following:

- Right-click and then select **Delete**.
- Press the **Delete** key on the keyboard.

DELETE A TARGET

1 Do one 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, do the following:
   - To view the log information of the export operation, click **Details**.
   - Click **OK**.

How to Import Racks and Templates

1 Click **Import**. The Import window appears.
2 From the Import window, do the following:
   a) Browse for and select the Rack or Template Exported Files.
   b) Click **Open**.
   c) When the import success/fail dialog appears, do the following:
      - To view the log information of the import operation, click **Details**.
      - Click **OK**.

Close Bed Layout and Utilities

Do one of the following:

- Click  in the lower right corner to exit the utility and return to the main menu.
- Click  on the upper right corner to close the utility.

ELECTRONIC RECORD MANAGEMENT (ERM) FEATURES

Electronic Record Management (ERM) Features

The implementation of an Electronic Record Management (ERM) system can be complex. TRILUTION LH has the ability to assist in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management. 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.

For information about activating the ERM features, see ERM.

ERM Administration

ERM Features are accessed from the **Liquid Handling | Utilities | ERM | ERM Features** menu by a user assigned to the default Admin group. In this dialog box, choose whether or not 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, see Users and Groups.

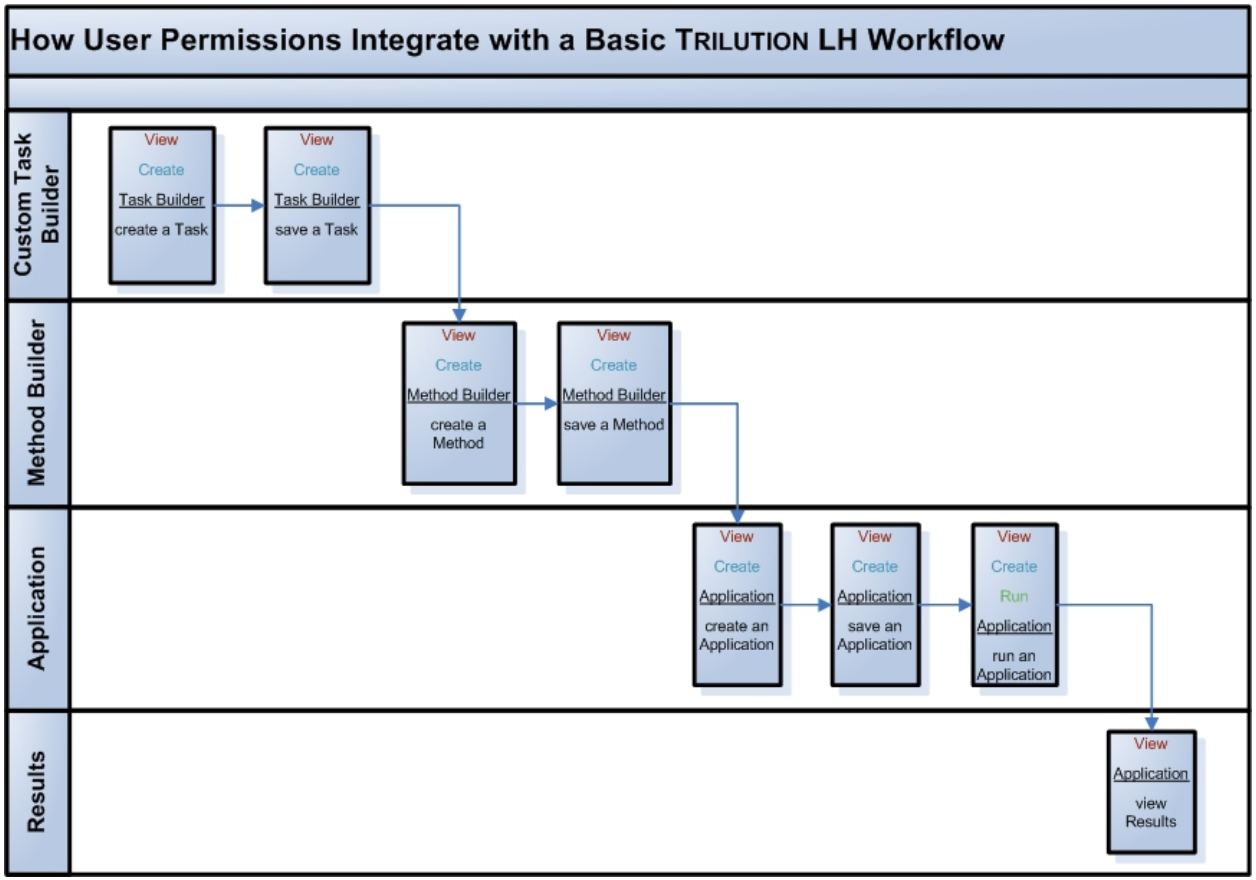
Users and Groups

By default, during the software installation, two groups are created: Admin and Analyst. “Administrator” is the default user in the Admin group. The Admin group is assigned all permissions. “Analyst” is the default user in the Analyst group. The Analyst group can create, modify, view, and run applications in the software.

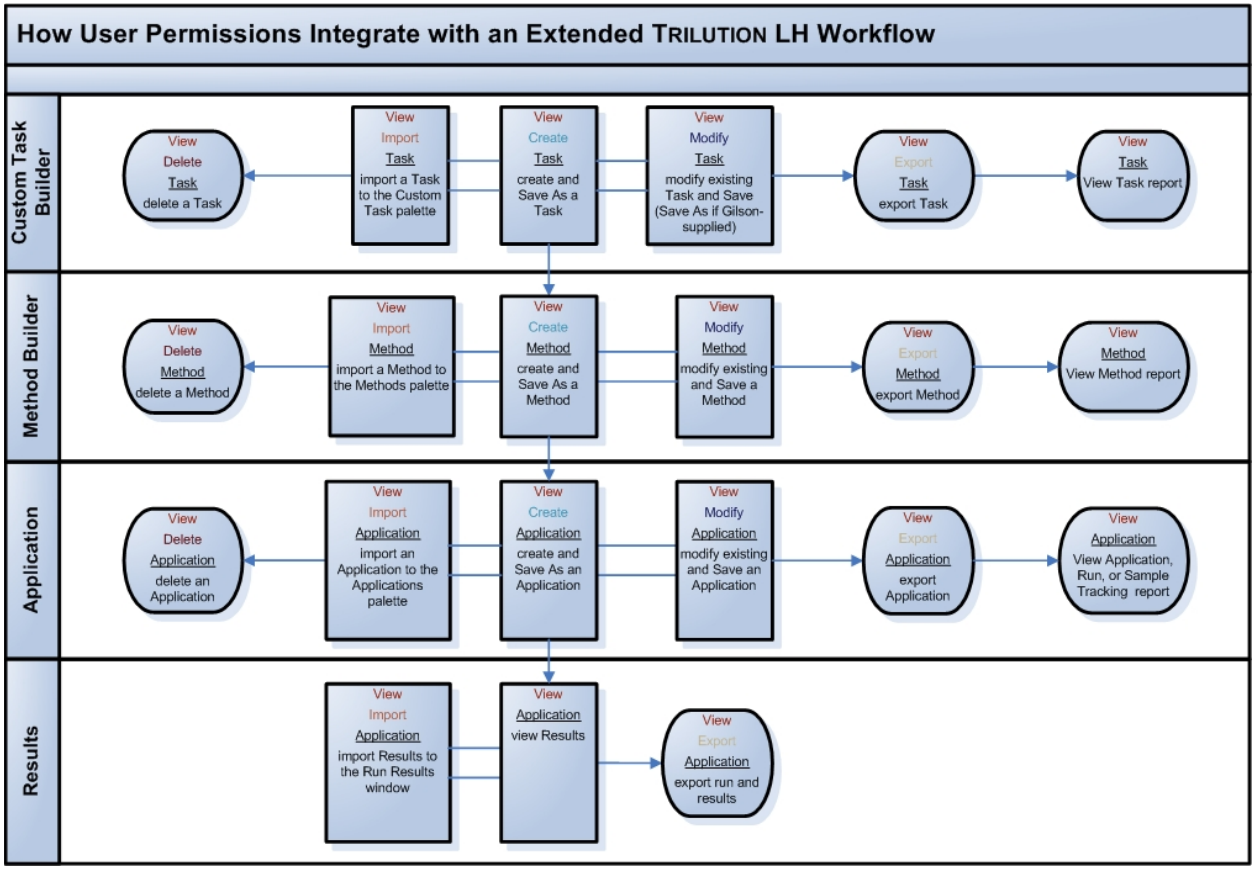
GROUP	DEFAULT PERMISSIONS
Admin	• Create • Modify • Delete • View • Import • Export • Run
Analyst	• Create • Modify • View • Run

Default Permissions for Default Groups

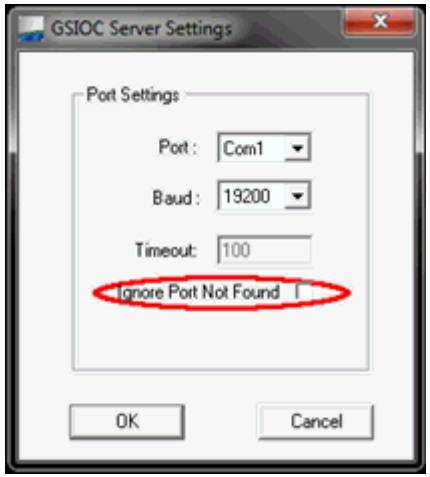
The graphic below depicts which permissions are required for a basic workflow. The permissions are listed first, followed by the builder in which those permissions must be granted, followed by the action.



The graphic below depicts the use of permissions for a more detailed workflow.



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

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 computer. For communication to occur, the Gilson instrument must be connected via an RS-232 connection to the computer or connected via a GSIOC connection to a Gilson interface instrument that is connected to the computer.

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 > 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

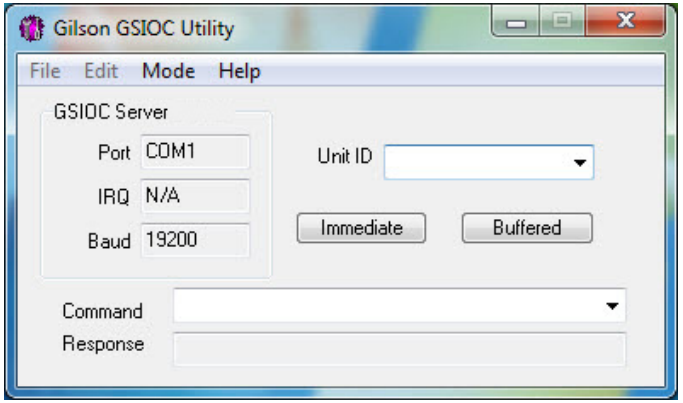
Using the GSIOC Utility, you can determine the instruments currently connected to the computer.

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

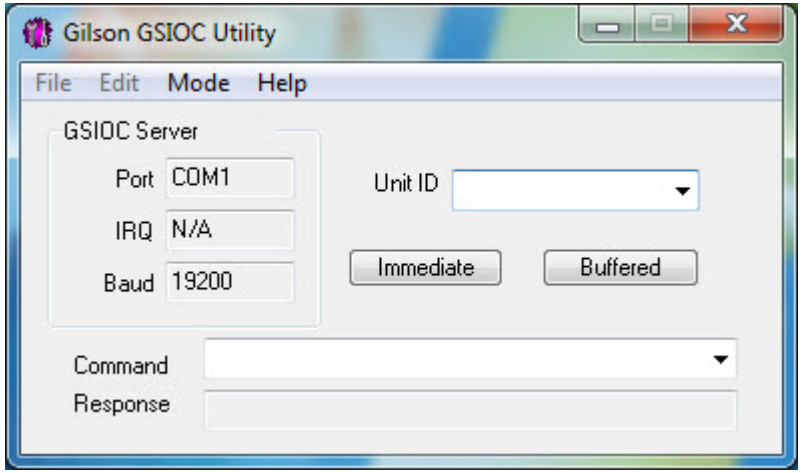


In the Basic mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments.

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

Where the command to be sent is specified. For more information on sending commands, see Send an Immediate Command or Send a Buffered Command.

Response Field

Returns a response to an immediate or buffered command.

The response to a successfully completed buffered command is “ok”.

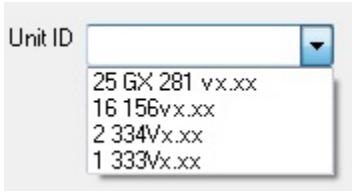
The response to an unsuccessfully completed immediate or buffered command is “#error”.

A list of valid responses to commands for each instrument is available in its commands list or user’s guide.

BASIC MODE MENUS

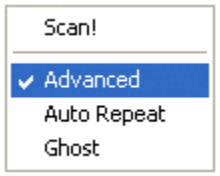
Mode Menu

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.

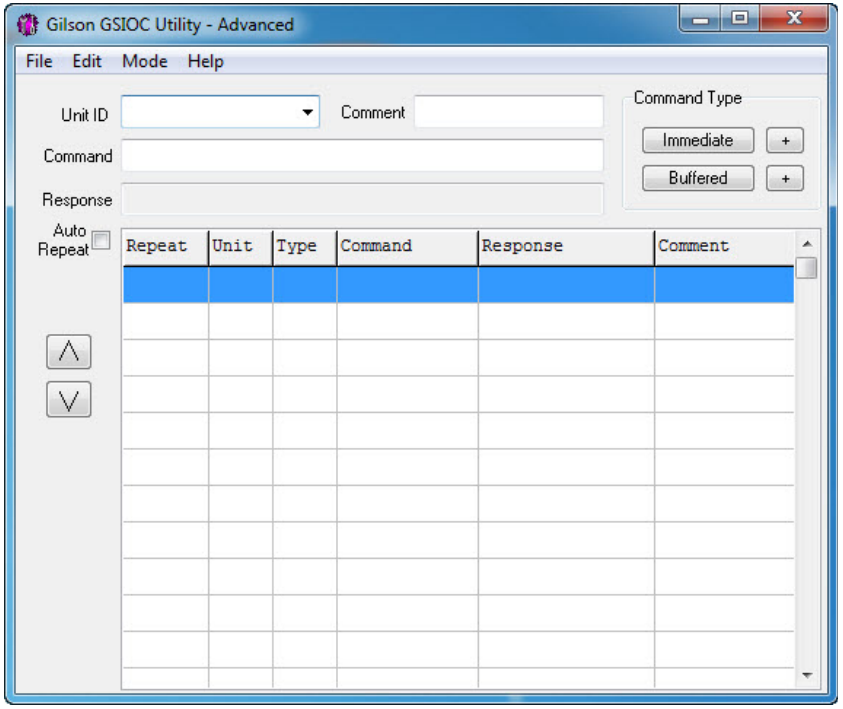
Advanced Mode

ADVANCED MODE

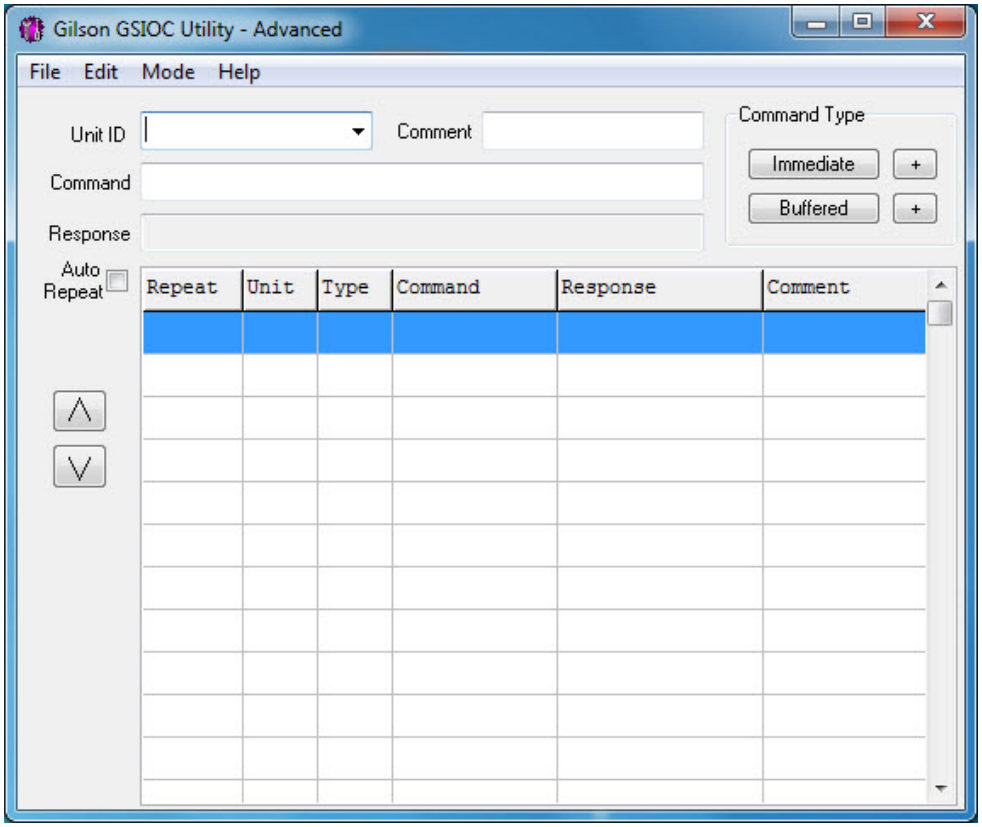
In the Advanced mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments. In this mode, immediate and buffered commands with comments can be saved to a command list to be used as needed. The command lines can be repeated automatically to monitor the status of the instrument.

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, see Insert an Immediate Command.

The + next to Buffered is used to insert a buffered command in the command list. For more information, see Insert a Buffered Command.

Arrow Up or Arrow Down Button

These buttons (^ or v) 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 v 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, see 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, see Send a Buffered Command.

Response Field

Returns a response to an immediate or buffered command.

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 by double-clicking 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

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

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, see 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, see 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)

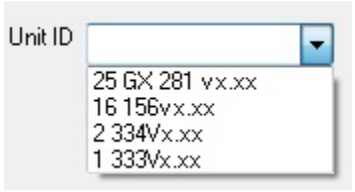
Adds or removes the repeat option for the highlighted command.

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.

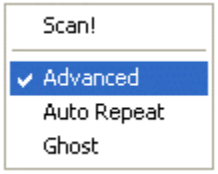
Mode Menu

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 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.

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.

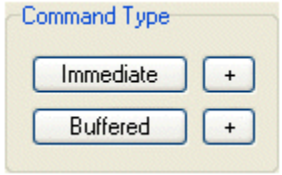
Using the Edit Menu

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.

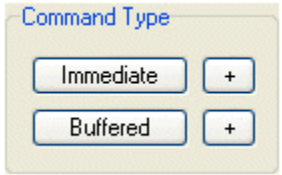
Using the Edit Menu

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 Immediate 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 Buffered.

Advanced Mode

Using the Buffered 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 Buffered.

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.

REFERENCE TOPICS

Flow Rates

SYRINGE PUMPS

The following table provides suggested flow rate values by instrument and syringe size.

INSTRUMENT								
	215 Liquid Handler		402 Pump Single/Dual/Dual with Tee		GX-271/274 ASPEC (406 Single/Dual)		VERITY 4060 Syringe Pump/VERITY 4260 Syringe Pump and GX Syringe Pump	
Syringe Size (µL)	Min (mL/min)	Max (mL/min)	Min (mL/min)	Max (mL/min)	Min (mL/min)	Max (mL/min)	Min (mL/min)	Max (mL/min)
100	0.0002	3.3	0.0001	4	0.0001	4	0.001	4
250	0.0004	8.4	0.001	10	0.001	10	0.001	10
500	0.001	16	0.001	20	0.001	20	0.01	20
1000	0.002	33	0.01	40	0.01	40	0.01	40
5000	0.01	100	0.01	100	0.01	100	0.1	100
10000	0.02	100	0.01	100	0.01	100	0.1	100
25000	0.1	100	0.1	100	0.1	100	0.1	100

MINIPULS 3

For Minipuls 3 flow rates, refer to Minipuls 3 Tubing Options and Associated Maximum Flow Rates.

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.

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.

Minipuls 3 Tubing Options and Associated Maximum Flow Rates

TUBING	MAXIMUM FLOW RATE (ML/MIN)	TUBING	MAXIMUM FLOW RATE (ML/MIN)	TUBING	MAXIMUM FLOW RATE (ML/MIN)
Standard		Fluoroelastomer 4 mm	33.92	Fluoroelastomer 2.0 mm	23.9
PVC 0.25 mm	0.41	Silicone 0.6 mm	1.58	Fluoroelastomer 3.0 mm	48.34
PVC 0.38 mm	0.69	Silicone 1 mm	4.13	Fluoroelastomer 4 mm	74.19
PVC 0.51 mm	1.42	Silicone 2 mm	14.94	Fluoroelastomer 6 mm	153.85
PVC 0.76 mm	2.15	Silicone 2.8 mm	21.73	Silicone 2 mm	25.72
PVC 1.02 mm	4.06	Polypropylene 0.5 mm	1.48	Silicone 3 mm	45.45
PVC 1.3 mm	6.14	Polypropylene 1 mm	4.74	Silicone 4 mm	68.77
PVC 1.52 mm	9.09	Polypropylene 2 mm	15.52	Silicone 5 mm	106.19
PVC 1.65 mm	10.46	**High Flow**		Silicone 6.0 mm	150.94
PVC 2.06 mm	15.1	PVC 2.06 mm	24.7	Silicone 7.0	211.45
PVC 2.29 mm	18.79	PVC 2.29 mm	30.08	Polypropylene 2 mm	27.01
PVC 2.79 mm	22.17	PVC 2.79 mm	42.55	Polypropylene 3.2 mm	55.05
PVC 3.16 mm	27.52	PVC 3.16 mm	49.59	Polypropylene 6.4	169.61
Fluoroelastomer 0.5 mm	1.77	PVC 4.0 mm	80.94		

Fluoroelastomer 1 mm	3.87	PVC 5.0 mm	96		
Fluoroelastomer 2 mm	12.54	PVC 6.0 mm	157.89		
Fluoroelastomer 3 mm	28.25	PVC 8.0 mm	209.61		

Variable Types

TYPE	VALUE	DEFINITION
24V Contact	1, 2, 3, 4, 5	Refers to the 24V contact of an instrument. Refer to the label on the back of the instrument for the identity of the 24V contact.
Contact State	OPEN, CLOSE	Refers to the state of a contact.
GSIOC	BUFFERED, IMMEDIATE	Refers to the GSIOC command type.
Injection Valve	LOAD, INJECT	Refers to the position of an injection valve.
Input Contact	A, B, C, D, E	Refers to the input contact of an instrument. Refer to the label on the back of the instrument for the identity of the input contact.
Instrument		Refers to an instrument found in the configuration.
LH Valve	PROBE, RESERVOIR, GAS	Refers to the syringe pump valve position.
Module ID	1, 2, 3, 4, 5, 6	Refers to the ID of a module on a GX Series instrument.
Move Option	Edge, Center	Refers to reference point in the X/Y positioning over a well.
Number	0	Refers to an integer or decimal number.
On/Off	ON, OFF	Refers to an on/off state.
Output Contact	1, 2, 3, 4, 5, 6, 7, 8	Refers to the output contact of an instrument. Refer to the label on the back of the instrument for the identity of the output contact.
Probe	ALL, Pick Probe, ALL Config Probes, ALL Used Probes	Refers to the probes that a particular action will reference.

Read In Variable		Refers to the return value from a command.
Rinse Speed	OFF, LOW, HIGH	Refers to the speed of the rinse pump on a GX Series instrument.
RinsePump ID	1, 2	Refers to the ID of the rinse pump on a GX Series instrument.
Safe State	Z, XY, XYZ, Pump, Valvemate, Injector	Used in conjunction with the Synchronize command.
Solvent Valve	1, 2, 3, 4, 5, 6	Refers to the position of the solvent selection valve on the pump. Values other than 1 are only valid on a GX Series Solvent System pump.
String		Refers to a general string.
Syringe	ALL, Pick Syringe, ALL Config Syringes, ALL Used Syringes	Refers to the pump syringes that a particular action will reference.
Transfer Port	A, B, C, D, E, F, G, H	Refers to the ID of a transfer port on an SPE instrument.
True/False	True, False	Refers to a general Boolean value.
Valve ID	1, 2, 3, 4, 5, 6, 7, 8	Refers to the ID of an injection valve. VALVE ID is used with the GX-281 (1 = Z injection module, 2 = Left Direct Inject, 3 = Right Direct Inject)
VALVEMATE Position	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Refers to the valve position of a VALVEMATE valve.
Well	0, Use Config Wells	Refers to a well in which an action will occur.
Z Value	Auto Calculate, Absolute Value, Tube Bottom, Top, Tube Top, Z Adjust	Refers to a reference point that will serve as the origin for a Z movement. Z Offsets refer to a distance from this reference point, with positive values being above and negative being below.
Zone		Refers to the zone in which an action will occur.
Length		Represents a distance. Supported units are: • cm • mm

Speed		Represents the speed at which a movement will occur. Supported units are: • cm/sec • mm/hr • mm/min • mm/sec
Volume		Represents a volume. Supported units are: • mL • nL • µL
Flow Rate		Represents the rate at which fluids are pumped. Supported units are: • mL/hr • mL/min • mL/sec • µL/min • µL/sec
Time		Represents a period of time. Supported units are: • hrs • min • sec
Pressure		Represents pressure. Supported units are: • Bar • MPa • psi
Temperature		Represents temperature. Supported units are: • C • F • K
Mass		Represents an objects mass. Supported units are: • mg • ug

Operators

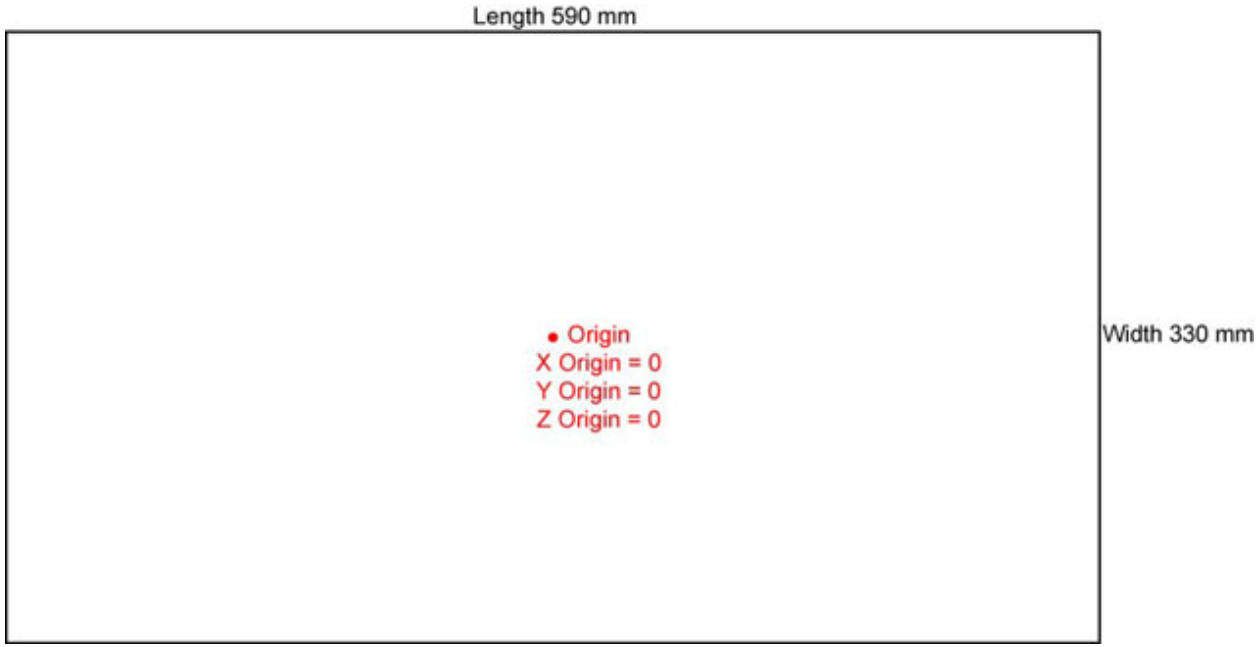
Refer to the following table for an overview of the operators available for use in the Method Builder and Custom Task Builder.

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, see 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.

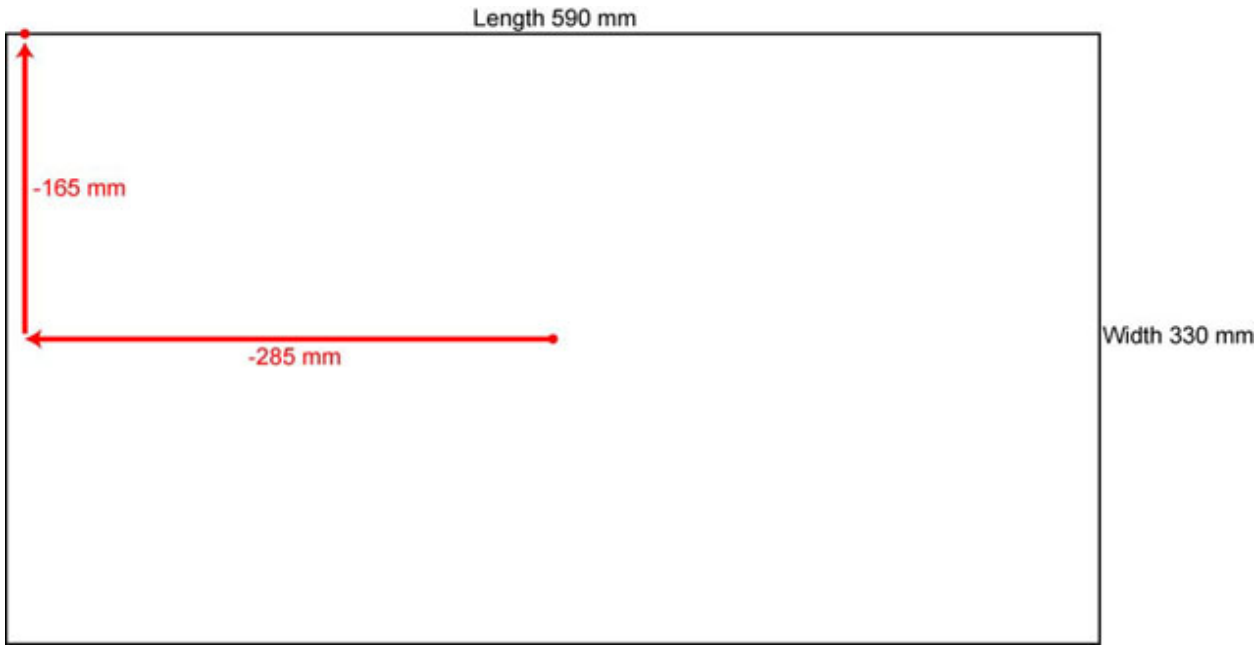
	Do Only In	Creates a container for placing commands, operators, or tasks, which will be executed only in the circumstance specified within the operator (for example, executing a Prime Task in the First Method Iteration only). Tasks, commands, and operators within the Do Only In container will be executed 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.
	Pick	Creates a container for placing commands, operators, or tasks, which will be executed in succession for the number of iterations determined by the software. The number of iterations will vary based on the liquid handler's ability to access multiple wells with the probes at the same time. This operator is also capable of assigning probe information to certain command or task properties, so that their operation is limited to the probes in use within a given iteration. This operator is useful when designing tasks for use with multiple probe instruments.
	Intelligent Pipetting	Creates a container for placing commands, operators, or tasks, which will be executed in succession for the number of iterations determined by the software. The number of iterations will vary based on the pump's sample transfer capacity (syringe size, transfer tubing volume, etc.), and the requested volume of sample to transfer. This operator is also capable of assigning syringe information to certain commands or tasks, so that their operation is limited to the syringes in use during a given iteration.
	Intelligent Pipetting Aliquot	Creates a container for placing commands, operators, or tasks, which will be executed in succession for the number of iterations determined by the software. The number of iterations will vary based on the pump's sample transfer capacity (syringe size, transfer tubing volume, etc.), and the requested volume of sample to transfer. This operator is also capable of assigning syringe information to certain commands or tasks, so that their operation is limited to the syringes in use during a given iteration. This operator is also capable of limiting certain operations to the aspirate cycle, when used in conjunction with the Do Only In operator, and is capable of assigning volume to certain commands and tasks, as needed.

Origin

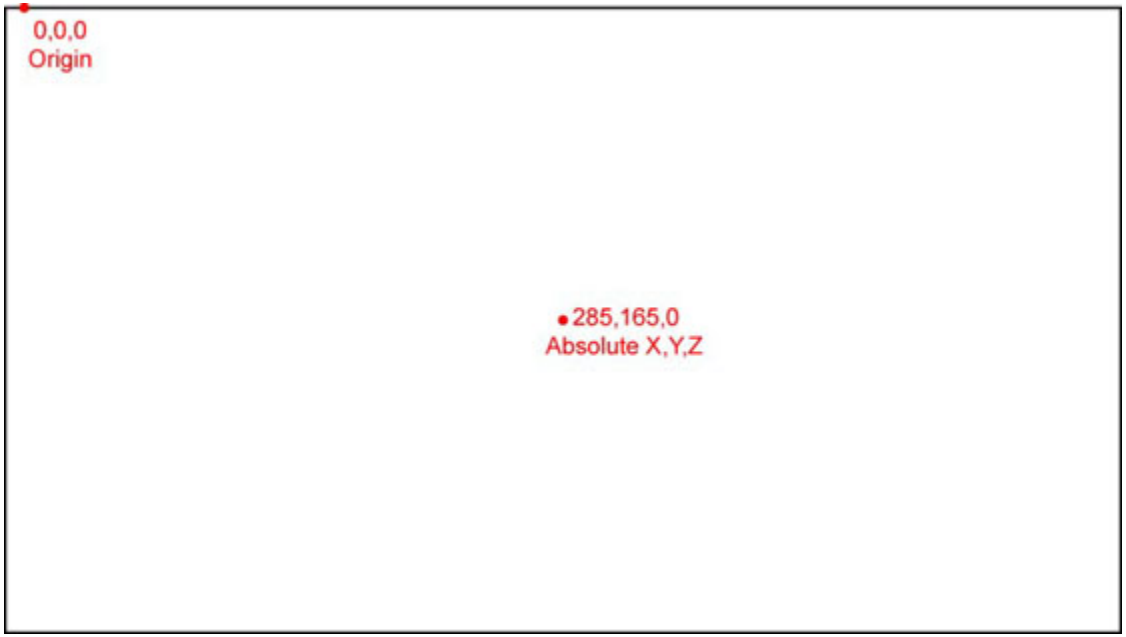
The origin is a reference used when creating custom templates using the Bed Layout and Utilities. For more information, see How to Create a Template.



Origin (X Origin=0, Y Origin=0, Z Origin=0)



Move X-285 and Y-165



Origin (Default Settings Applied)

Zoom

To zoom, do the following:

- 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.