PrepWorks

PrepWorks version 10.0.1

User Guide

Agilent Technologies

Notices

User Guide Part Number

Contact Information

Acknowledgements

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Letter to our Customers

Dear Customer,

The Agilent Technologies acquisition of Velocity11 resulted in the following changes:

- Creation of Agilent Technologies Automation Solutions, formerly Velocity11
- Renaming of some Velocity11 products
- New Customer Service and Technical Support contact information
- New website address for product information

Please make a note of the following changes as they impact this user guide.

Velocity11 product name changes

Velocity11 product name	Changes to ...
Access2 Automated Microplate Loader	Automated Centrifuge Loader
Element Automation System	BioCel 900 System
IWorks Device Driver Programming Interface	VWorks Device Driver Interface
PlatePierce Seal Piercing Station	Microplate Seal Piercer
VCode Barcode Print and Apply Station	Microplate Barcode Labeler
Velocity11 Robot	3-Axis Robot
VHooks Integration Interface	VWorks Hooks Interface
VPrep Pipetting System	Vertical Pipetting Station
VSpin Microplate Centrifuge	Microplate Centrifuge
VStack Labware Stacker	Labware Stacker

New contact information

Documentation feedback: documentation.automation@agilent.com

Technical Support: 1.800.979.4811 or +1.408.345.8011
service.automation@agilent.com

Customer Service: 1.866.428.9811 or +1.408.345.8356
orders.automation@agilent.com

European Service: +44 (0)1763853638
euroservice.automation@agilent.com

Web: www.agilent.com/lifesciences/automation

Contents

Preface

This preface contains the following topics:

❑ "Who should read this guide" on page vi

❑ "What this guide covers" on page vii

❑ "Finding your software version" on page vii

❑ "Accessing Velocity11 user information" on page viii

❑ "Reporting problems" on page ix

Who should read this guide

About this topic This topic describes the target audience of this user guide.

Job roles and responsibilities This user guide is intended to be read by the following people who use the VPrep™ Pipetting System (VPrep Pipettor).

Job Role	Responsibilities
Integrator	Someone who writes software and configures hardware to enable integration of the hardware with the VPrep Pipettor.
Lab manager, administrator or technician	Someone who is responsible for: ❑ Installing the VPrep Pipettor ❑ Developing the protocols that use the VPrep Pipettor ❑ Developing the applications that use the VPrep Pipettor ❑ Solving the more challenging problems that may arise ❑ Developing training materials and standard operating procedures for operators
Operator	Someone who performs the daily production work that uses the VPrep Pipettor and solves routine problems. Your organization may choose to create its own procedures for operators based on the information in this guide.

Related topics

For more information about...	See...
What this guide covers	"What this guide covers" on page vii
How to access different formats of this user guide	"Accessing Velocity11 user information" on page viii

What this guide covers

What is covered   This guide describes the installation, setup, and operation of the PrepWorks™ software.

Software version   This guide documents PrepWorks version 10.0.1.

Related guides   The *PrepWorks User Guide* should be used in conjunction with the *VPrep Pipetting System User Guide*, which describes how to set up and operate the VPrep Pipettor.

If you are integrating the VPrep Pipettor as a third-party device, the third-party user documents may also be applicable.

Related topics

For more information about...	See...
Reporting problems	"Reporting problems" on page ix
Who should read this guide	"Who should read this guide" on page vi
How to access different formats of this user guide	"Accessing Velocity11 user information" on page viii

Finding your software version

About this topic   This topic shows you some ways to find out your version of PrepWorks.

Procedure   ***To find the PrepWorks version:***

1. Start PrepWorks.
2. Choose **Help > About PrepWorks**.

Related topics

For more information about...	See...
PrepWorks software	"PrepWorks overview" on page 1
Reporting problems	"Reporting problems" on page ix

Accessing Velocity11 user information

About this topic

This topic describes the different formats of Velocity11 user information and explains how to access the user information.

Formats available

Velocity11 user information is provided to you as:

❑ A PDF file

❑ A printed book

The information in each format is the same but each format has different benefits.

Where to find user information

PDF file

The PDF file of the user guide is on the software CD that is supplied with the product.

Velocity11 website

You can download the latest version of any PDF file from the Velocity11 website at www.velocity11.com.

Note: All Velocity11 user information can be searched from the website at www.velocity11.com.

PDF user guides

Computer requirements

To open a user guide in PDF format, you need a PDF viewer. You can download a free PDF viewer from the internet.

Printing and searching

The user guides in PDF format are mainly for printing additional copies. You can perform simple searches in the PDF file, although these searches are much slower than online help searches.

More information

For more information about using PDF documents, see the user documentation for the PDF viewer.

Related topics

For more information about...	See...
Who should read this guide	"Who should read this guide" on page vi
What this guide covers	"What this guide covers" on page vii

Reporting problems

About this topic

This topic describes how to report hardware, software, and user guide problems.

Contacting Velocity11

If you find a problem, contact Velocity11 Technical Support using one of the following methods:

❑ Sending an email to service@velocity11.com or euroservice@velocity11.com

❑ Calling Velocity11 Technical Support at 1.800.979.4811 or +1.650.846.6611 outside the US

❑ Sending a bug report from within the PrepWorks software

Reporting hardware problems

When contacting Velocity11, make sure you have the serial number of the device ready. You can find the serial number label on the lower left side or rear of the VPrep Pipettor.

Reporting software problems

When reporting software problems, provide the following:

❑ Software version number

❑ Relevant software files

Finding the software version number

When you contact Velocity11 Technical Support, make sure you have the software version number ready. To find the PrepWorks version number, see "Finding your software version" on page vii.

Sending files

When resolving software bugs or other problems, send the following files:

❑ Detailed, precise description of the problem you are experiencing

❑ Protocol files (if the issue occurs during a protocol run or simulation)

❑ Protocol log file (if the issue occurs during a protocol run)

❑ Velocity11 registry files from the Microsoft® Windows® registry

❑ Error message text (or screen capture of the error message window)

❑ Screen capture of the About PrepWorks dialog box

Reporting user guide problems

If you find a problem with this user guide or have suggestions for improvement, send your comments using one of the following methods:

❑ Click the feedback button (✉) in the online help.

❑ Send an email to documentation@velocity11.com.

PrepWorks overview

1

This chapter contains the following topics:

❑ "PrepWorks description" on page 2

❑ "PrepWorks user interface overview" on page 4

❑ "Relationships of PrepWorks components" on page 6

❑ "PrepWorks workflow" on page 9

❑ "Installing PrepWorks" on page 10

❑ "Uninstalling PrepWorks" on page 12

PrepWorks description

About this topic

This topic provides an overview of the PrepWorks features.

What PrepWorks software does

The PrepWorks software provides automated control of the VPrep Pipetting System (VPrep Pipettor). The VPrep Pipettor is an automated liquid-handling platform that dispenses liquid accurately and precisely into microplates.
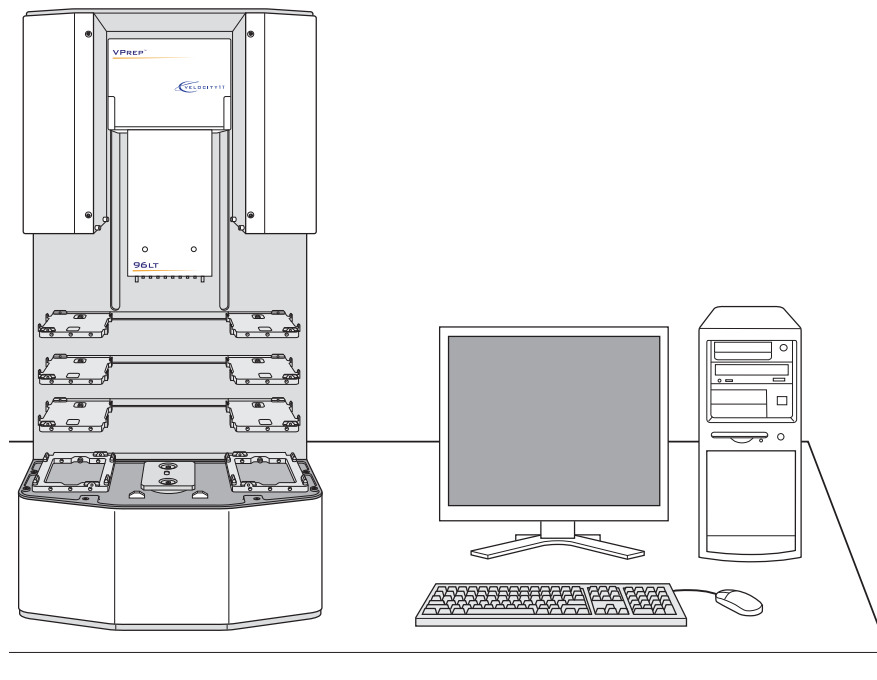
You can use the PrepWorks software to control a standalone VPrep Pipettor.

Depending on your permission level, the PrepWorks software enables you to:

❑ Set up the VPrep Pipettor using the VPrep Diagnostics utility. VPrep Diagnostics contains tools for creating profiles, setting teachpoints, and configuring accessory shelves.

❑ Define labware and liquids using the Labware Editor and Liquid Library Editor utilities.

❑ Create and run protocols.

❑ Perform real-time VPrep Pipettor manipulation and troubleshooting using the VPrep Diagnostics utility.

About integrated VPrep Pipettors

To control a VPrep Pipettor that is integrated with:

❑ *A Velocity11 lab automation system*. See the corresponding automation software user guide.

❑ *A third-party lab automation system*. You can use the PrepWorks automation interface. For details, see "Using the automation interface" on page 83.

Contact Velocity11 Technical Support for more information about the automated control of a VPrep Pipettor.

About protocols

PrepWorks protocols control the tasks that the VPrep Pipettor performs. A protocol is a sequence of tasks that you run in PrepWorks. Each task performs an activity, such as attaching or removing tips from a disposable-tip pipette head.

Before running a protocol, you can use a compiler feature to check the protocol for logical errors that would otherwise prevent successful completion of the protocol.

Real-time manipulation and troubleshooting

The PrepWorks event log allows the operator to analyze each run and troubleshoot problems.

The PrepWorks software enables access to VPrep Diagnostics, which you can use to manipulate the VPrep Pipettor in real-time by sending individual commands. This is useful for setting up and troubleshooting the VPrep Pipettor.

Labware Editor and Liquid Library Editor

You can access the Labware Editor and the Liquid Library Editor through PrepWorks.

❑ *Labware Editor*. Stores labware definition information.

❑ *Liquid Library Editor*. Stores information about the liquid classes.

Labware and liquids definitions can be copied onto other integrated devices in a lab automation system or shared by multiple VPrep Pipettors that are controlled from the same computer.

Related topics

For information about…	See…
PrepWorks user interface or components	❑ "PrepWorks user interface overview" on page 4 ❑ "Relationships of PrepWorks components" on page 6
VPrep Diagnostics	*VPrep Pipetting System User Guide*
PrepWorks Workflow	"PrepWorks workflow" on page 9

PrepWorks user interface overview

About this topic   This topic provides a brief overview of the PrepWorks user interface.

PrepWorks window   The PrepWorks window contains a main work area and four palettes.
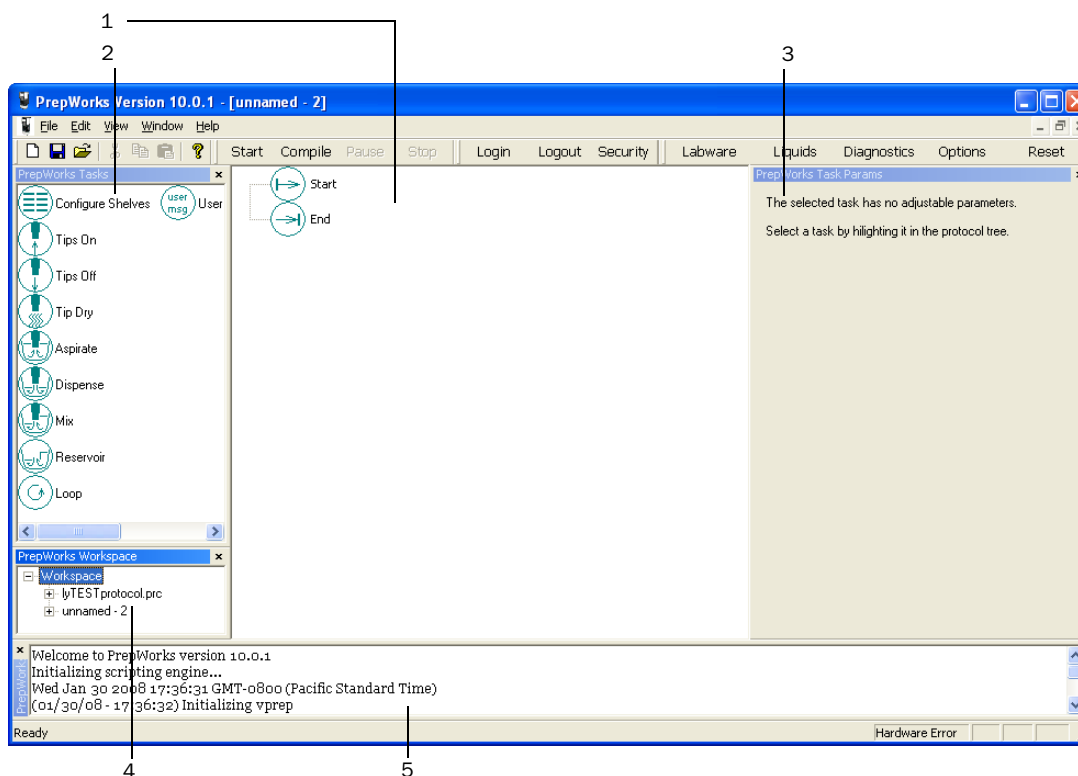
Item	Feature	Description
1	Main work area	Provides an area for creating and editing a protocol. During a run, the software highlights the active task in the protocol.
2	PrepWorks Tasks palette	Provides access to all the available tasks that may be used in a protocol.
3	PrepWorks Task Parameters palette	Enables you to set the parameters for the selected task in the protocol.
4	PrepWorks Workspace palette	Displays the list of open protocols, and allows you to select which protocol is currently displayed in the main work area.
5	PrepWorks Log palette	Displays a running event log and communication and status messages.

Note: To show or hide a palette, choose **View > Palettes**, and then select the palette.

PrepWorks toolbars　The PrepWorks toolbars include:

❑ *Standard.* Contains the buttons for standard Microsoft Windows commands, including New, Save, Open, Cut, Copy, and Paste.

❑ *Protocol, Security, and Utility.* Contain the buttons described in the following table.

Button	Description	See...
Protocol toolbar		
Start	Begins the selected protocol run.	"Running a protocol" on page 26
Compile	Checks the protocol for errors.	"Compiling and saving a protocol" on page 54
Pause	Temporarily interrupts a protocol that is in progress.	"Pausing or stopping a protocol" on page 28
Stop	Cancels the protocol that is in progress.	"Pausing or stopping a protocol" on page 28
Security toolbar		
Login	Enables an authorized PrepWorks user to log in to the software. This provides a level of security by controlling access to software security levels.	"Logging in" on page 17
Logout	Logs out the current PrepWorks user.	"Logging out" on page 17
Security	Enables the PrepWorks administrator to set up and manage user accounts.	"Managing user accounts" on page 15
Utility toolbar		
Labware	Starts the Labware Editor utility.	"Labware Editor overview" on page 60
Liquids	Starts the Liquid Library Editor utility.	"About the Liquid Library Editor" on page 78
Diagnostics	Starts the VPrep Diagnostics utility.	*VPrep Pipetting System User Guide*
Options	Starts a utility that enables customization of the PrepWorks log and compiler.	❑ "Configuring log options" on page 19 ❑ "Configuring compiler options" on page 55
Reset	Reinitializes the VPrep Pipettor.	

Status bar　The Status bar is located on the bottom of the PrepWorks window. It displays short text messages describing the current state of the software, the current user, and tooltips.

Related topics

For information about…	See…
PrepWorks components	"Relationships of PrepWorks components" on page 6
PrepWorks Workflow	"PrepWorks workflow" on page 9

Relationships of PrepWorks components

About this topic
PrepWorks uses different components, such as file types, to run. This topic describes the components and how they work together.

What you should know
It is important to understand PrepWorks file dependencies. Changing the settings or options in one component will affect one or more of the other components.

Definitions
The following table describes the PrepWorks components.

Component	Definition	See…
Protocol file	A file (.prc file extenstion) that contains instructions for performing a run and a reference to the profile.	"Creating protocols" on page 29
Profile	A collection of settings, stored in the Windows registry, that contain the communication and configuration settings (base, head type, tip size, and teachpoints) required to run protocols for a given VPrep Pipettor hardware configuration. The profiles also store the configured shelf information. The VPrep Pipettor has no firmware, so all configuration settings are stored in the profile. **!! DAMAGE HAZARD !! Modifying the Microsoft Windows registry can cause the Microsoft Windows operating system to fail and cause damage to the VPrep Pipettor.**	*VPrep Pipetting System User Guide*
Teachpoint	Part of the profile that tells the pipette head exactly where to move to perform a task for a particular type of labware.	*VPrep Pipetting System User Guide*

Component	Definition	See…
Labware library	Labware definitions and classes stored in the Windows registry.	"Setting labware definitions" on page 59
Liquid library	Pipetting settings, setup for different liquid types, stored in the Microsoft Windows registry.	"Setting liquid-handling definitions" on page 77
User database	List of user accounts, privileges, and passwords stored in the Microsoft Windows registry.	"Managing user accounts" on page 15

Location of protocol files

Velocity11 recommends that you create protocol folders within the PrepWorks folder for storing the protocol files (*.prc).

Component relationships

The following figure illustrates the most basic relationship between the PrepWorks components.
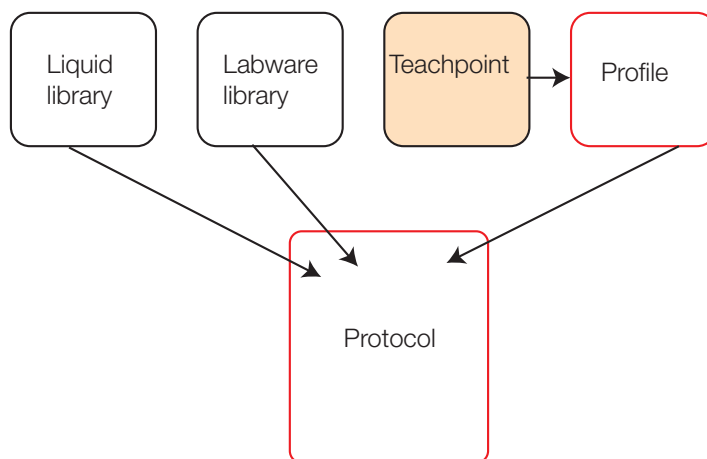
The following table describes the consequences of making changes to one or more components.

If you…	Then…
Make a change to the teachpoint	All protocols that use those profiles are affected.
Create a new profile	You must specify the new profile in your protocol.

If you…	Then…
Want to copy a protocol to another system or computer	To copy the following, you must export the appropriate registry files to the destination computer: ❑ Labware and liquid libraries ❑ Profile You must also copy the protocol file (*.prc) to the destination computer.

Related topics

For information about…	See…
Getting started with the PrepWorks software	"PrepWorks workflow" on page 9
Exporting registry files	"Moving or sending a registry file" on page 20
Creating profiles and setting teachpoints	*VPrep Pipetting System User Guide*

PrepWorks workflow

About this topic

This topic presents the PrepWorks workflow.

The workflow for operating the VPrep Pipettor in a third-party lab automation system might differ. For details, refer to the third-party user documentation.

Workflow

Step	Procedure	See…
1	Install PrepWorks.	"Installing PrepWorks" on page 10
2	Log in to PrepWorks.	"Logging in and out" on page 17
3	Set up user accounts.	"Managing user accounts" on page 15
4	Define the labware.	"Adding labware definitions" on page 63
5	(Optional) Define the liquid classes.	"Creating liquid classes" on page 79
6	Create protocols.	"Creating a protocol" on page 30
7	Prepare the VPrep Pipettor for a run.	*VPrep Pipetting System User Guide*
8	Start the protocol run.	"Running a protocol" on page 26
9	(Optional) Optimize liquid classes.	"Creating liquid classes" on page 79

Related topics

For information about…	See…
Setting up VPrep Pipettor, including creating profiles and setting teachpoints	*VPrep Pipetting System User Guide*

Installing PrepWorks

About this topic Velocity11 installs the software on the computers that are provided by Velocity11. If your system contains a computer from a different source, you can install the PrepWorks from the provided PrepWorks CD.

Before you begin Ensure the computer system meets the following requirements at a minimum:

❑ Pentium 4, 2 GHz or faster

❑ 256 MB RAM

❑ Windows 2000 or Windows XP

❑ 50 GB free hard disk space

!! IMPORTANT !!   Installing PrepWorks and VWorks software on the same computer will create a software conflict.

Installing PrepWorks *To install the PrepWorks software:*

1. Insert the PrepWorks CD into the computer CD drive.

2. In Microsoft Windows Explorer, double-click the Setup.exe file on the CD. The PrepWorks InstallShield Wizard appears.
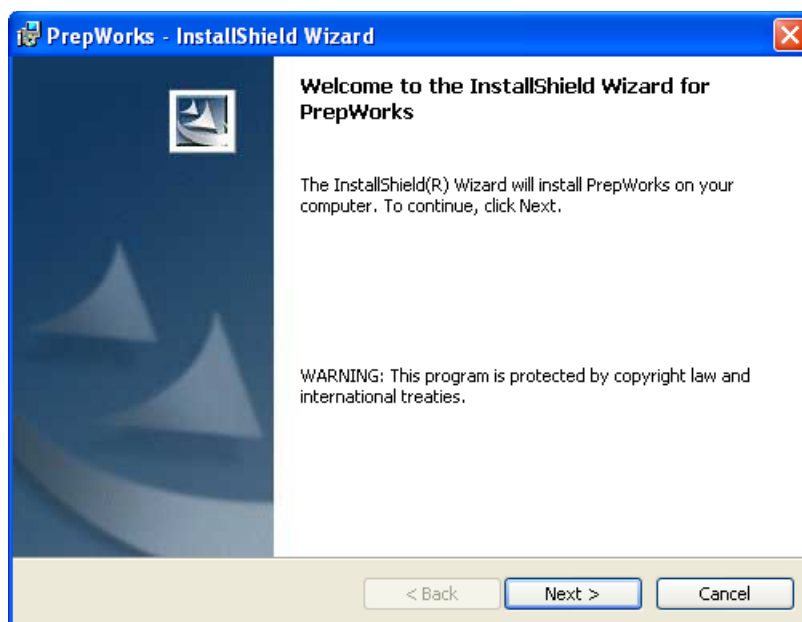
3. Follow the instructions that appear on each screen.

After installing PrepWorks, you can find a Start menu shortcut for starting the software: **Start > All Programs > Velocity11 > PrepWorks**.

Installing registry keys

The registry keys store all the instrument-specific information, such as liquid and labware definitions, teachpoints, and shelf configurations. The registry keys are stored in the Microsoft Windows registry file on the computer. You must have administrative privileges for the Windows registry to make any changes to the registry file. To receive permission, see your IT administrator.

The PrepWorks software CD contains registry keys for your VPrep Pipettor configuration.

To install the registry keys:

1. Insert PrepWorks software CD in the computer CD drive.

2. Navigate to and open the files on your CD drive.

3. Double-click the icon:

    PrepWorks Base Serial Number w_Head Serial Number.reg

    For example, PrepWorks 00500001 w_0050256.

4. When a message appears and asks if you want to change the registry, click **Yes**.

5. When a confirmation message appears stating that the information was successfully entered, click **OK**.

6. Repeat step 3 to step 5 for the shared registry keys. The shared keys are named as:

    shared date month day year.reg

Related information

For information about...	See...
Exporting Velocity11 data from the registry	"Moving or sending a registry file" on page 20
Setting up PrepWorks	"Setting up PrepWorks" on page 13

Uninstalling PrepWorks

About this topic   This topic describes how to uninstall PrepWorks.

When to remove Velocity11 registry files

In general, it is sufficient to uninstall the PrepWorks program without removing the registry files. However, you can remove the Velocity11files from the registry if:

❑ You want to make a completely fresh start with PrepWorks, removing all user accounts, teachpoints, profiles, and liquid and labware definitions

❑ You do not intend to run PrepWorks on your system again

!! DAMAGE HAZARD !!   **Modifying the Microsoft Windows registry can cause the Microsoft Windows operating system to fail and cause damage to the VPrep Pipettor.**

Procedures

To remove PrepWorks:

1. Use the Add / Remove Programs control panel.

    For more information, see the online help for your Windows operating system.

!! IMPORTANT !!   **The following procedure deletes the user accounts, labware definitions, liquid library data, device profiles, and teachpoints.**

To remove the Velocity11 files from the registry:

1. On the Windows desktop, choose **Start > Run**.

2. In the **Run** dialog box, type `regedit` and then click **OK**.

    The **Registry Editor** dialog box opens.

3. Navigate to and select the following folder:

    HKEY_LOCAL_MACHINE\SOFTWARE\Velocity11

4. Make sure you have selected the Velocity11 folder.

    !! IMPORTANT !!   **Making a mistake and deleting the wrong registry folder can cause critical failures with your operating system.**

5. Select **Edit > Delete**.

Related information

For information about…	See…
Exporting Velocity11 data from the registry files (for example, before clearing the registry)	"Moving or sending a registry file" on page 20

Setting up PrepWorks

2

This chapter contains the following topics:

Starting PrepWorks

About this topic   This topic describes how to start PrepWorks.

Before you start PrepWorks   See the *VPrep Pipetting System User Guide* for instructions on starting up the VPrep Pipettor.

Note: If the VPrep Pipettor has Pump Modules, the Pump Modules must be turned on prior to turning on the VPrep Pipettor.

!! INJURY HAZARD !!   **Do not start PrepWorks while touching the VPrep Pipettor. Automatic motion begins without warning. Keep clear of the VPrep Pipettor while it is in motion.**

Starting PrepWorks   *To start PrepWorks:*

1. Make sure that everyone is clear of the VPrep Pipettor and that there are no objects that could obstruct any moving parts.

2. On the Microsoft Windows desktop, double-click the PrepWorks shortcut icon.

   Alternatively, choose **Start > All Programs > Velocity11 > PrepWorks**.

When you start PrepWorks, the VPrep Pipettor motors initialize and home the pipette head.

Note: If you start the PrepWorks software without first starting the connected VPrep Pipettor, the following error message appears.

Related topics

For information about…	See…
Starting up VPrep Pipettor	*VPrep Pipetting System User Guide*
How to log in	"Logging in and out" on page 17
Setting up user accounts	"Managing user accounts" on page 15
Starting a protocol	"Workflow for performing a run" on page 24

Managing user accounts

About this topic

This topic is for the PrepWorks administrator. This topic describes the different types of user accounts and how to set up and delete accounts.

User permission levels

The PrepWorks software provides five different permission levels as defined below.

!! DAMAGE HAZARD !! **Ensure that each user is assigned the proper access permission. Improper access by untrained personnel could result in damage to the VPrep Pipettor. For example, if an untrained operator gained access to VPrep Diagnostics and edited a profile or set a teachpoint incorrectly, the pipette head could collide with a shelf.**

Permission level	Description
Administrator	Full access to the PrepWorks software.
Technician	Full access, except to the User Editor dialog box and the VPrep Diagnostics Motor Config tab.
Operator	Access only to: ❑ Open and run protocols, but not to edit or save protocols. ❑ VPrep Diagnostics IO tab, Jog Teach tab, and Processes tab
Guest	Access only to open protocols, but not to run, edit, or save protocols.
No access	Access limited to logging in. The administrator can assign the No access level to accounts that are not active, but should not be deleted from the system.

Logging in as administrator

To log in to PrepWorks as the administrator:

1. On the **PrepWorks** toolbar, click **Login**. The **User Authentication** dialog box appears.
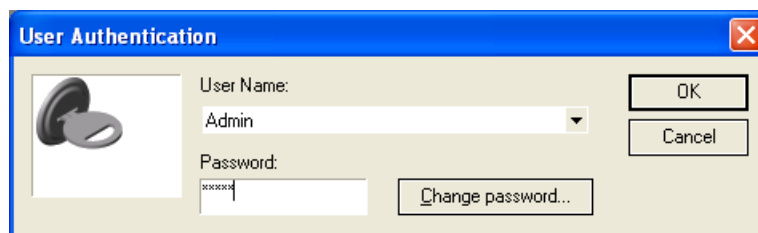
2. From the **User Name** list, select **Admin**.

3. Type the **Password** and click **OK**.

Note: If this is the first time anyone has logged in to PrepWorks, there is one administrator account called **Admin**. By default the password is blank.

Adding and deleting user accounts

To add User Account:

1. Log in to the PrepWorks software as an administrator.

2. On the toolbar in the **PrepWorks** window, click **Security**. The **User Editor** dialog box appears.
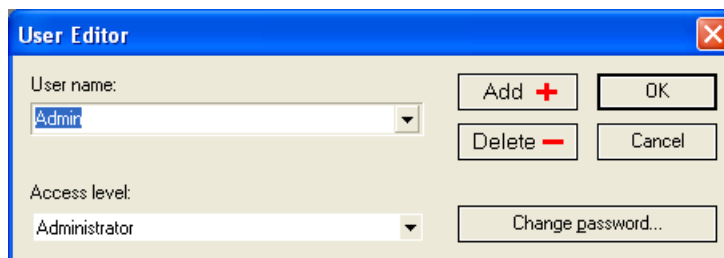
3. Click **Add**.

4. In the **User name** box, type the name of the new user over the words **New User**.

5. In the **Access level** list, select the user permission level. For a description of the levels, see "User permission levels" on page 15.

6. (Optional) To set the initial password, click **Change password**.

   Note: The default password is blank.

7. Click **OK**.

To delete a user account:

1. Log in to the PrepWorks software as an administrator.

2. On the toolbar in the PrepWorks window, click **Security**. The **User Editor** dialog box appears.

3. Select the name in the **User name** list, and then click **Delete**.

4. When the message appears and asks you to confirm the deletion, click **Yes**.

Related topics

For information about…	See…
Changing your password	"Changing your password" on page 18
Changing the log parameters	"Configuring log options" on page 19

Logging in and out

About this topic

To log in to the PrepWorks software you must have a user account created by an administrator. If you do not have a user account, see your PrepWorks administrator.

Logging in

To log in to PrepWorks:

1. On the PrepWorks toolbar, click **Login**. The **User Authentication** dialog box appears.
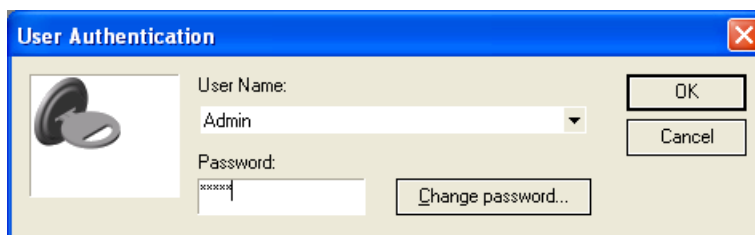
2. From the **User Name** list, select your account name.

3. Type the **Password** and click **OK**.

   Note: Your access level to the software is determined by your login account. See the PrepWorks administrator to change your permission level ("Managing user accounts" on page 15).

Logging out

Make sure you log out of PrepWorks after completing your work. Logging out of PrepWorks ensures that unauthorized users do not use your account to control the VPrep Pipettor.

!! DAMAGE HAZARD !! Failure to log out could result in improper access by an untrained user. Improper access by untrained personnel could result in damage to the VPrep Pipettor.

To log out of PrepWorks:

1. On the toolbar in the **PrepWorks** window, click **Logout**.

Related topics

For information about…	See…
How to open a protocol	"Opening a protocol in PrepWorks" on page 25
Creating user accounts and user permission levels	"Managing user accounts" on page 15

Changing your password

About this topic   If you have one of the following permission levels, you can change the password for your user account using the procedure in this topic:

❑   Administrator

❑   Technician

❑   Operator

Procedure   *To change the password:*

1.   On the PrepWorks toolbar, click **Login**. The **User Authentication** dialog box appears.
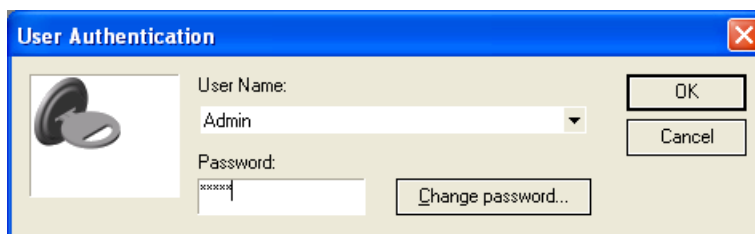
2.   Select account from the **User Name** list, and then click **Change password**. The **Change Password** dialog box appears.
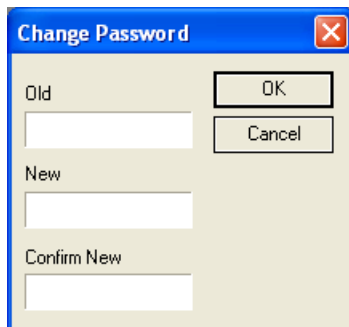
3.   Type the current password in the **Old** box, and type the new password in the **New** and **Confirm New** boxes.

4.   Click **OK** to set the password, and then click **OK** to exit the **User Authentication** dialog box.

Related topics

For information about...	See...
Creating user accounts and user permission levels	"Managing user accounts" on page 15
Job roles and responsibilities	"Who should read this guide" on page vi

Configuring log options

About this topic

The PrepWorks Log palette in the main window displays a running event log, communication, and status messages. PrepWorks stores the messages in a log file.

To configure the log options, you must have PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Changing log options

To change the log options:

1. On the **PrepWorks** toolbar, click **Options**. The **PrepWorks Options** dialog box appears.

2. Click the **Log Options** tab.
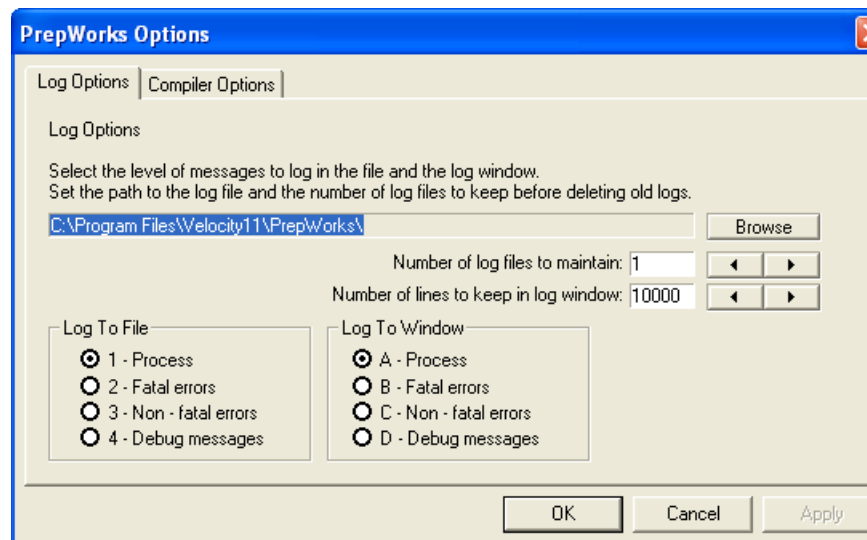
3. To change the log file storage location, click **Browse**. In the **Browse for Folder** dialog box, select the destination folder, and click **OK**.

   Note: By default, the file is stored in
   \\Program Files\Velocity11\PrepWorks

4. In the **Number of log files to maintain** box, type or select the number.

5. In the **Number of lines to keep in log window** type or select the number of lines that appear in the **PrepWorks Log** palette.

6. Under **Log to File**, select the type information to be saved to the log file.

7. Under **Log to Window**, select the type of information to be displayed in the **PrepWorks Log** palette.

8. Click **OK** to save the changes and close the dialog box.

Related topics

For information about…	See…
PrepWorks user interface or components	❑ "PrepWorks user interface overview" on page 4 ❑ "Relationships of PrepWorks components" on page 6
PrepWorks Workflow	"PrepWorks workflow" on page 9
User permissions	"Managing user accounts" on page 15

Moving or sending a registry file

About this topic

This topic provides instructions on how to export a Windows registry file. You export the registry file so that you can import the registry information to another computer or to email the registry file to Velocity11.

When to do this

You might need to copy or send a registry file in the following situations:

❑ To make a backup of a VPrep Pipettor profile

❑ To transfer a VPrep Pipettor profile from one computer to another

❑ To email the labware or liquid library or VPrep Pipettor profile when requested by personnel at Velocity11

About moving data

The labware and liquid libraries and profiles are maintained in the Windows registry of the controlling computer.

If you make a change to the labware or liquids definitions or a profile, you can use a two-step process to propagate the change to another computer.

1. Export the Windows registry key containing the data to a file.

2. Import the file to the other computer's registry.

Damage hazard

!! DAMAGE HAZARD !!   Use caution when working with the Windows registry. Making a mistake when editing the registry can cause critical failures with your operating system.

Exporting a registry key

To export a registry key:

1. From the Windows **Start** menu, select **Run**.

2. In the **Open** text box, type `regedit`, and click **OK**.

The Windows registry editor opens.

3. Expand the registry folders to display and select one of the following folders:

   ◆ HKEY_LOCAL_MACHINE\SOFTWARE\Velocity11\Shared\Labware \Labware_Entries

   ◆ HKEY_LOCAL_MACHINE\SOFTWARE\Velocity11\Shared\Liquid Library

   ◆ HKEY_LOCAL_MACHINE\SOFTWARE\Velocity11*device name*\Profiles

4. From the **Registry** (or **File**) menu, select **Export**.

   The **Export Registry File** dialog box opens.

5. Before saving the file, make sure you:

   ◆ Select **Selected branch**.

   ◆ If you are moving the file to a computer with a different Windows operating system, set **Save as type** appropriately.
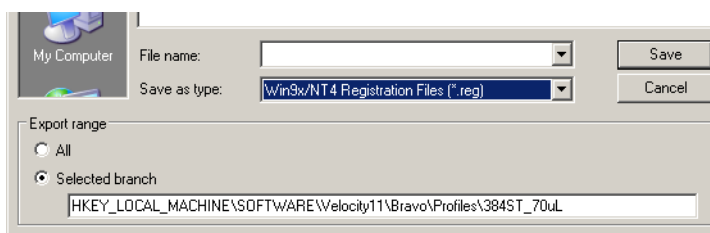
6. Save the file.

7. Select **Registry** > **Exit** (or **File** > **Exit)** to close the registry editor.

Importing a registry key

If this is the first time you are importing a registry file to the computer, use the **Open With** command.

Before you start

You must have Windows Administrator permissions to perform this task.

To import a registry key:

1. Copy the registry file to any location on the recipient computer. If necessary, change the file extension from *.re_ to *.reg.

2. On the recipient computer, double-click the registry file.

3. Click **Yes** when the confirmation message appears.

The information in the file is written automatically to the registry and this will be confirmed with a message.

Note: When importing labware definitions, the labware class must be reassigned.

Emailing a registry file

Occasionally, you might be asked to send a registry file to Velocity11.

To email a registry file:

1. Export the Windows registry key containing the data to a file.

2. Change the file extension to .re_ (This is necessary because many firewalls do not allow *.reg files to be emailed.)

3. Email the file.

Related topics

For information about…	See…
Creating VPrep Pipettor profiles	*VPrep Pipetting System User Guide*
Defining labware	"Setting labware definitions" on page 59
Defining liquid classes	"Setting liquid-handling definitions" on page 77
PrepWorks Workflow	"PrepWorks workflow" on page 9

Performing a run

<div style="text-align: right; font-size: 3em; font-weight: bold;">3</div>

This chapter describes how to run an existing PrepWorks protocol on the VPrep Pipettor. The procedures in this chapter can be performed by a user with PrepWorks Operator privileges.

This chapter contains the following topics:

Workflow for performing a run

About this topic This topic tells you where to find the information about starting a run and performing tasks associated with running a protocol.

Workflow

Step	Task	See...
1	Perform pre-run checks and prepare for a run.	*VPrep Pipetting System User Guide*
2	Open the protocol.	"Opening a protocol in PrepWorks" on page 25
3	Start the protocol run.	"Running a protocol" on page 26
4	Monitor the run.	"Monitoring the run" on page 27
5	Clean up after the run.	*VPrep Pipetting System User Guide*
6	If finished with PrepWorks tasks, log out of PrepWorks.	"Logging in and out" on page 17

Related topics

For information about...	See...
Pausing or stopping a run	"Pausing or stopping a protocol" on page 28
Stopping in an emergency	*VPrep Pipetting System User Guide*
Shutting down the VPrep Pipettor	*VPrep Pipetting System User Guide*

Opening a protocol in PrepWorks

About this topic

This topic describes how to open a protocol that has already been created.

Opening a protocol

!! INJURY HAZARD !!   Do not open a protocol while touching the VPrep Pipettor. Automatic motion begins without warning. Keep clear of the VPrep Pipettor while it is in motion.

To open a protocol:

1. In the **PrepWorks** window, choose **File** > **Open**.

2. In the **Open** window, select the protocol file (.prc file extension), and then click **Open**.

Related topics

For information about…	See…
Creating a protocol	"Creating a protocol" on page 30
Running a protocol	"Running a protocol" on page 26

Running a protocol

About this topic   This topic describes how to run a PrepWorks protocol on the VPrep Pipettor.

Before you start   **!! IMPORTANT !!   Make sure you have prepared the VPrep Pipettor for a run. See the *VPrep Pipetting System User Guide*.**

Running the Protocol

To run the protocol:

1. In the **PrepWorks** window, open the protocol.

2. If you have not already checked the protocol for errors, click **Compile** on the toolbar.

    When the **Compile complete!** message appears, click **OK**.

3. Click **Start**.

    The Start button becomes unavailable and the Pause button becomes available.

4. Monitor the progress of the run.

Related topics

For information about…	See…
Checking a protocol for errors	"Compiling and saving a protocol" on page 54
Perparing for a run	*VPrep Pipetting System User Guide*
Monitoring the progress of the run	"Monitoring the run" on page 27
Pausing or stopping a run	"Pausing or stopping a protocol" on page 28
Performing an emergency stop	*VPrep Pipetting System User Guide*

Monitoring the run

About this topic

After starting a run, the operation of the system should be monitored appropriately. Exactly what you do to monitor a run depends on your system and the protocol that you are using.

Monitoring overall progress

You can monitor the following:

❑ In the PrepWorks work area, a highlight appears on each task icon in the protocol while that task is being run.

❑ In the PrepWorks Log palette, progress messages appear. The log files record events as they are performed on all plates in the run.

❑ If User Message tasks are included in the protocol, you are prompted to respond to them.

❑ Depending on the protocol, you might be required to add and remove labware, empty liquid waste containers, or fill liquid reservoirs.

!! IMPORTANT !! No errors are reported when a liquid waste container becomes full or a liquid reservoir becomes empty. Exceptions to this are reservoirs on a Weigh Shelf.

Note: To guard against the problem of a full waste container or empty reservoir container, the protocol writer can incorporate User Message tasks into the protocol to remind the operator at the appropriate steps in the protocol. Alternatively, operators can set timer alarms to remind them to fill reservoirs and empty the waste container at the appropriate time.

Related topics

For information about…	See…
Changing the log options	"Configuring log options" on page 19
Pausing or stopping a run	"Pausing or stopping a protocol" on page 28
Performing an emergency stop	*VPrep Pipetting System User Guide*

Pausing or stopping a protocol

About this topic

This topic describes how to perform a normal stop or pause a protocol.

For details on how to perform an emergency stop, see the *VPrep Pipetting System User Guide*.

!! DAMAGE HAZARD !!   Do not turn off the power switch on the rear panel of the VPrep Pipettor to stop a run. When you turn on the power again, the protocol cannot resume, and the shelf movement could result in a pipette head crash.

Pausing and resuming a protocol

To pause and resume a protocol:

1. On the toolbar in the **PrepWorks** window, click **Pause**.

    The motion stops after the last command is finished, and the Pause button label changes to Start.

2. To resume a paused protocol, click **Start**.

Stopping a protocol

You cannot resume a stopped protocol.

To stop a protocol that is running:

1. On the toolbar in the PrepWorks window, click **Stop**. The motion stops after the last command is finished.

Related topics

For information about…	See…
How to stop a run in an emergency	*VPrep Pipetting System User Guide*
How to contact Velocity11 Technical Support	"Reporting problems" on page ix
How to log out of PrepWorks	"Logging in and out" on page 17

Creating protocols

4

The procedures in this chapter can be performed by a user with PrepWorks Technician or Administrator privileges.

This chapter contains the following topics:

Creating a protocol

About this topic   You use PrepWorks protocols to control the tasks that the VPrep Pipettor performs.

To create a protocol you must have PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Before you begin   Make some reference notes describing the goal of the protocol and listing the tasks, labware, and volumes required. Reference notes can help to maintain your focus while using the PrepWorks software to create the protocol.

Ensure the following:

❑   The labware definitions and the liquid classes have been defined.

❑   You know how each shelf on the VPrep Pipettor is going to be configured.

❑   Any accessories, such as the Pump Module and Weigh Shelf, have been properly installed and configured.

❑   The correct profile has been initialized.

❑   You have any scripts that you want to use for the protocol tasks.

Workflow   The basic workflow for creating a protocol consists of the following:

Step	Topic
1	"Creating a protocol" on page 30
2	"Adding and arranging tasks" on page 31
3	"About protocol tasks" on page 32
4	"Compiling and saving a protocol" on page 54

Creating a protocol   You can create a new protocol or you can copy a protocol to use as a template for creating a new protocol.

To create a new PrepWorks protocol:

1.   Make sure the **PrepWorks Tasks** palette appears in the **PrepWorks** window.

   To show a hidden palette, choose **View > Palettes**.

2.   Choose **File > New**. The Start and End icons appear in the blank work area, as shown in the following figure.
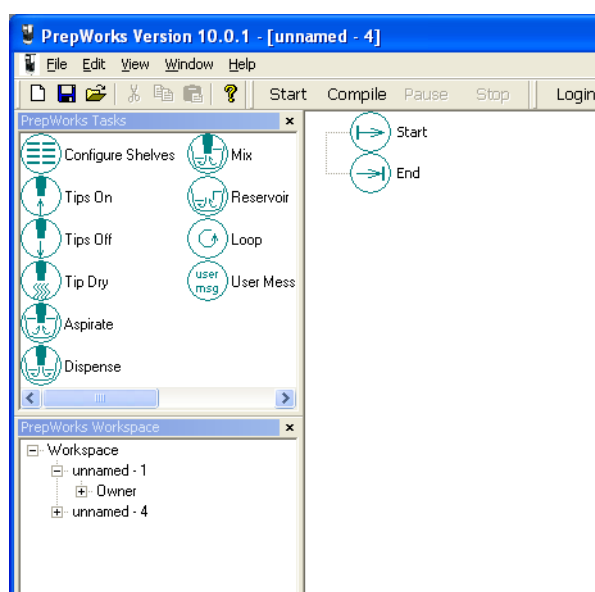
To create a protocol from a copy:

1. In the **PrepWorks** window, choose **File > Open**.

2. In the **Open** dialog box, select the protocol file (*.prc), and then click **OK**. The protocol appears in the work area of the **PrepWorks** window.

3. Choose **File > Save As**.

4. In the **Save As** dialog box, type the file name of the new protocol, and click **Save**.

5. Edit the copied protocol as necessary.

Adding and arranging tasks

To add a task to the protocol:

1. Drag and drop tasks from the **PrepWorks Tasks** palette onto the main work area, between the **Start** and **End** icons.

   The first task after Start is typically the Configure Shelves task, which specifies which labware is on the VPrep Pipettor shelves.

2. Configure the parameters for each task that you add to the protocol. See "About protocol tasks" on page 32.

To delete a task from the protocol:

1. In the work area of the **PrepWorks** window, highlight the task, and then press DELETE.

Note: To highlight multiple tasks simultaneously, you can use SHIFT+click or CTRL+click.

To rearrange tasks in the protocol:

1. In the main work area of the **PrepWorks** window, drag the task icons to the desired positions. Alternatively, you can cut and paste the task icons.

Related information

For information about…	See…
Defining labware	"Labware Editor overview" on page 60
Defining liquids	"About the Liquid Library Editor" on page 78
Setting up the VPrep Pipettor and initializing profiles	*VPrep Pipetting System User Guide*
Running a protocol	"Workflow for performing a run" on page 24
Contacting Velocity11	"Contacting Velocity11" on page ix

About protocol tasks

About this topic

A PrepWorks protocol is a sequence of tasks that you run to control the VPrep Pipettor operation. Each task performs an activity. This topic describes the tasks that are available for use in the PrepWorks protocols.

Task descriptions

Each task is represented by an icon in the PrepWorks Task palette. Each task has associated parameters that are defined in the PrepWorks Task Params palette.

The following table lists the tasks available to PrepWorks protocols.

Task	Description	See…
Configure Shelves	Specifies the type of labware that goes on each VPrep Pipettor shelf. Use this task at the beginning of a protocol and any time in the protocol that you want the user to change the labware on a shelf.	"Setting the Configure Shelves parameters" on page 34
Tips On	For a disposable-tip pipette head, attaches the tips from a tipbox that is on either shelf 7 or shelf 8.	"Configuring Tip Change parameters" on page 36
Tips Off	For a disposable-tip pipette head, detaches the used tips into an empty tipbox on either shelf 7 or shelf 8.	"Configuring Tip Change parameters" on page 36

Task	Description	See…
Tip Dry	Not supported.	
Aspirate	Draws liquid from a plate or reagent tray into the pipette tips.	"Configuring Aspirate parameters" on page 40
Dispense	Releases liquid from the pipette tips into a plate or reagent tray.	"Configuring Dispense parameters" on page 42
Mix	Aspirates and dispenses liquid in a single plate or reservoir repeatedly to mix the liquid.	"Configuring Mix parameters" on page 45
Reservoir	Controls the filling and emptying of a reservoir using the Pump Module.	"Configuring Reservoir parameters" on page 49
Loop	Defines a segment of the protocol to be repeated a specified number of times.	"Configuring a Loop" on page 51
User Message	Inserts a text message with user interaction into the protocol.	"Configuring User Message parameters" on page 52

Related topics

For more information about…	See…
Creating protocols	"Creating a protocol" on page 30
Defining labware	"Setting labware definitions" on page 59
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Setting the Configure Shelves parameters

About this topic

The Configure Shelves task associates each VPrep Pipettor shelf with the particular plate type (labware).

Use Configure Shelves at the beginning of a PrepWorks protocol and any time in the protocol that you want the user to change the labware on a shelf. Configure Shelves provides an option to pause the protocol and prompt the user to manually place the plates on the shelves.

Procedure

To set the Configure Shelves parameters:

1. With the protocol displayed in the **PrepWorks** work area, highlight the **Configure Shelves** or the **Pause to verify shelf configuration** task icon.

The PrepWorks Task Params palette displays the Configure Shelves settings.

2. Select the appropriate labware from the list for each shelf.

   Note: The shelf lists contain entries from the Labware Editor, which contains full geometrical definitions of all labware to be used with the VPrep Pipettor. All labware used in the protocol must be configured in the Labware Editor.

3. To prompt the user to manually place or identify the appropriate labware on the shelves, select the **Pause protocol to confirm shelf configuration** check box.

   If this box is selected, the Verify Shelf Configuration dialog box appears when a Configure Shelves task runs during the protocol.

Verify Shelf Configuration

The following plates should be placed on the corresponding shelves.

Verify this configuration by clicking OK.
Click Cancel to abort the protocol.

1. 1536 Greiner 782076 blk sqr well flt k   2.
3.   4.
5. 384 V11 11962.001 Autofilling Micro   6.
7.   8. 384 V11 ST10 Tip Box 10734.102

OK   Cancel

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Creating protocols	"Creating a protocol" on page 30
Defining labware	"Setting labware definitions" on page 59
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Configuring Tip Change parameters

About this topic

To change the tips on a disposable-tip pipette head, you use the Tips On task to attach the tips from a tipbox and you use the Tips Off task to detach the used tips. This topic describes how to configure the parameters for these tasks in the protocol.

Configuring Tips On parameters

The Tips On task instructs the VPrep Pipettor to attach new tips to the pipette head.

To configure the Tips On task:

1. With the protocol displayed in the **PrepWorks** work area, highlight the **Tips On** task icon.

    The PrepWorks Task Params palette displays the Tip Change settings.
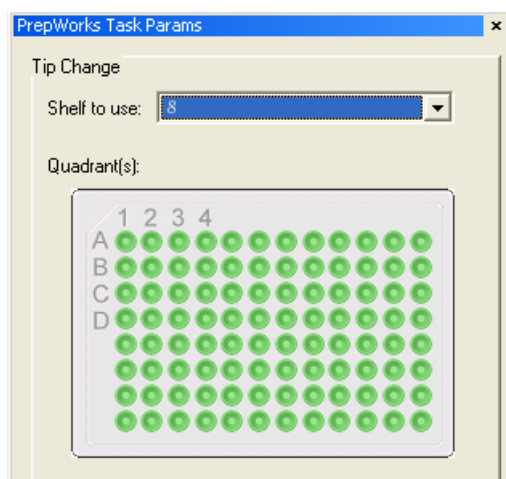
2. In the **Shelf to use** list, select the tipbox shelf.

    Note: Only shelf 7 or shelf 8 are available for the Tips On task because of their proximity to the tipbox press.

3. Ensure that the selected shelf has been configured as the tipbox shelf in the Configure Shelves task.

4. In the **Quadrant** graphic, specify which tips to attach. This step applies only if the pipette head has fewer tips than the plate has wells or if you are in serial-dilution mode.

Configuring Tips Off parameters

The Tips Off task instructs the VPrep Pipettor to detach and eject the disposable tips.

To configure the Tips Off task:

1. With the protocol displayed in the **PrepWorks** work area, select the **Tips Off** task icon.

    Tips Off
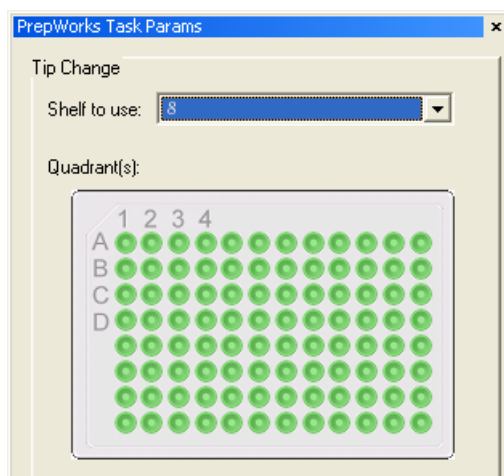
   The PrepWorks Task Params palette displays the Tip Change settings.

2. In the **Shelf to use** list, select the tipbox shelf.

   Note: Only shelf 7 or shelf 8 are available for the Tips Off task.

3. Ensure that the selected shelf has been configured as the tipbox shelf in the Configure Shelves task.

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Configuring the VPrep Pipettor shelves	"Setting the Configure Shelves parameters" on page 34
Specifying a plate quadrant for the task	"Specifying a quadrant of a plate" on page 38
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Specifying a quadrant of a plate

About this topic   If the pipette head has fewer tips than the labware has wells, such as in serial-dilution mode, specify the target quadrant.

About plate quadrants   When a task acts on some but not all of the pipettes, the **Quadrant** graphic allows you to specify the target wells.
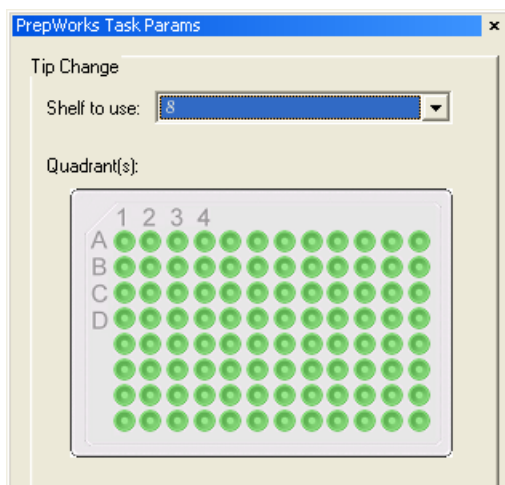
A quadrant is one-quarter of the wells on a plate. The wells selected are determined by how the pipette head configuration lines up with the configuration of the plate's wells.

The wells that comprise a quadrant are not contiguous. For example, suppose you have a 96-tip head and a 384-well plate. If you divide the plate wells into groups of four, you can represent the quadrants as:

❑   A1 represents the quadrant of all the upper left wells from each of the groups of four.

❑   A2 represents the quadrant of all the upper right wells from each of the groups of four.

❑   B1 represents the quadrant of all the lower left wells from each of the groups of four.

❑   B2 represents the quadrant of all the lower right wells from each of the groups of four.

A1   A2

B1   B2
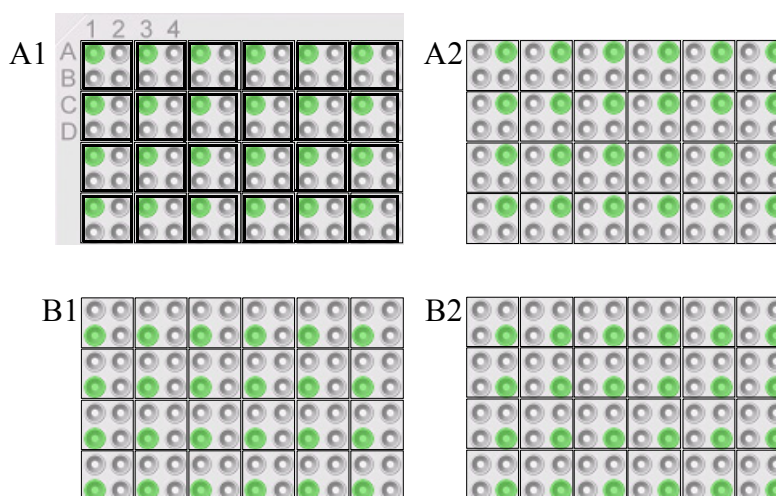
Selecting a quadrant

To select a quadrant of wells:

1. In the **Quadrant** graphic, click a well that represents the set of wells that comprise the desired quadrant. All wells in that quadrant are selected.

2. To select a different quadrant, click a well that represents the set of wells of the new quadrant, and then click a well from the previous quadrant to deselect all its wells.

Note: Clicking a well in a deselected quadrant, selects the quadrant. Clicking a well in a selected quadrant, deselects the quadrant. You can select any quadrant individually, any configuration of two or three quadrants, or all quadrants.

Related topics

| For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Creating protocols	"Creating a protocol" on page 30
Defining labware	"Setting labware definitions" on page 59
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Configuring Aspirate parameters

About this topic   The Aspirate task draws liquid or air from a source plate or reservoir into the pipette tips. This topic describes how to set the Aspirate task parameters.

Procedure   *To configure the Aspirate parameters:*

1. With the protocol displayed in the **PrepWorks** work area, highlight the **Aspirate** task icon.

   Aspirate

   The PrepWorks Task Params palette displays the Aspirate settings.

2. Select the **Shelf** from which to aspirate.

3. To specify a liquid class to aspirate, select the liquid class from the unlabeled list at the bottom of the **PrepWorks Task Params** palette.

4. Configure the volume parameters as follows:

   a. **Pre-aspirate volume**. Type the volume of air (µL) to draw into the tips before drawing the fluid.

   b. **Aspirate volume**. Type the volume of fluid (μL) to draw into each pipette tip.

   c. **Post-aspirate volume**. Type the volume of air (μL) to draw into the pipette tips after drawing the fluid.

5. In the **Quadrant** graphic, specify the quadrants from which to aspirate.

   Note: Quadrants appear after you select the shelf with the corresponding labware.

6. In the **Tips distance from well bottom** box, specify the tip position (mm) at which to aspirate.

   !! IMPORTANT !!   The labware definition must be accurate and the teachpoint must be precise in order for the system to position the tips at the correct distance from the well bottom.

   Note: If you are using dynamic tip extension, this value sets the lowest point to which the tips will travel.

7. In the area at the bottom of the **Task Params** palette, specify the following.

   Note: If you selected a liquid class, the velocity and acceleration values are entered automatically from the Liquid Library Editor and cannot be edited here.

   a. **Aspirate velocity**. Specify the speed (μL/s) at which to draw liquid into the tips.

   b. **Aspirate acceleration**. Specify the rate of increase in velocity (μL/s^2) before the maximum aspirate velocity is reached.

8. In the **Dynamic tip extension** box, specify the rate at which to move the pipette head down for each microliter aspirated. The software calculates the distance over which the tips will move without crashing.

   For example, if you want the tips to move at the same rate of change that the liquid level is dropping, use the following formula:

   1/cross-sectional area of the well (mm^2)

   Note: Dynamic tip extension can prevent overflow in wells that are very full. If fluids of different viscosities are present, you can use this parameter to aspirate the fluid of a specific viscosity.

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Defining liquids	"Setting labware definitions" on page 59
Defining labware	"Setting labware definitions" on page 59

For more information about…	See…
Configuring the VPrep Pipettor shelves	"Setting the Configure Shelves parameters" on page 34
Specifying a plate quadrant for the task	"Specifying a quadrant of a plate" on page 38
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Configuring Dispense parameters

About this topic The Dispense task ejects liquid or air from the tips into a destination plate or reservoir. This topic describes how to set the task parameters.

Dispense value limits The dispense volume cannot be greater than the aspirated volume.

Specifically, the Aspirate Volume + Pre-Aspirate Volume + Post-Aspirate Volume must be greater than, or equal to, Dispense Volume + Blowout Volume + Post Dispense Volume.

If you enter a total dispense volume that is greater than the total aspirate volume, an error message will appear when you compile the protocol.

Procedure *To configure the Dispense task:*

1. With the protocol displayed in the **PrepWorks** work area, highlight the **Dispense** task icon.

   The PrepWorks Task Params palette displays the Dispense settings.

2. Select the target shelf from the **Shelf** list.

3. To specify a liquid class, select the liquid class from the unlabeled list at the bottom of the **PrepWorks Task Params** palette.

4. Configure the volume parameters as follows:

   a. **Dispense volume**. Type the volume of fluid (μL) to release into the well.

   b. **Blowout volume**. Type the volume of airspace (μL) to push through the pipette tips after dispensing, while the tips are still in the wells.

   c. **Post-dispense volume**. Type the amount of airspace (μL) ejected from the pipette tips after the tips have moved out of the wells.

5. Select the **Flush Tips** check box if you want all the fluid and air to be ejected from the tips without specifying the volume.

6. In the **Quadrant** graphic, specify the quadrants from which to aspirate.

   Note: Quadrants appear after you select the shelf with the corresponding labware.

7. In the **Tips distance from well bottom** box, specify the pipette tip position (mm) at which to dispense.

   Note: If you are using dynamic tip retraction, this value sets the lowest point to which the tips will travel.

8. To specify that the pipette tips touch one or more sides of the wells, select the **Tip Touch** check box and set the following:

   a. **Tip touch rise height**. Type the vertical distance (mm) for the pipette tips to rise from the dispense height before tip touching commences. For example, you can specify a location just above the surface of the liquid.

   b. **Tip touch horizontal distance**. Type the horizontal distance (mm) for a tip to move. The value is based on the well diameter specified by the plate type, for example:

Value	Result
0	Tips move a horizontal distance equal to the well radius
> 0	Tips attempt to move past the well radius, which results in a more forceful tip touch
< 0	Tips move a distance less than the radius of the well, resulting in a lighter tip touch

   c. **Tip touch sides to touch**. Type the number of well sides that you want the tips to touch, where

      0 – None

      1 – North

      2 – North, East

      3 – North, East, South

      4 – North, East, South, West

9. In the area at the bottom of the **PrepWorks Task Params** palette, specify the following:

   Note: If you selected a liquid class, the velocity and acceleration values are entered automatically from the Liquid Library Editor and cannot be edited here.

   a. **Dispense velocity**. The rate at which to dispense the liquid.

   b. **Dispense acceleration**. The rate of increase in velocity before the dispense velocity is reached.

   c. **Dynamic tip retraction**. The rate at which to raise the pipette head for each microliter dispensed.

      For example, if you want the tips to move at the same rate of change that the liquid level is dispensing, use the following formula:

      1/cross-sectional area of the well (mm2)

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32

For more information about...	See...
Defining liquids	"Setting labware definitions" on page 59
Defining labware	"Setting labware definitions" on page 59
Configuring the VPrep Pipettor shelves	"Setting the Configure Shelves parameters" on page 34
Specifying a plate quadrant for the task	"Specifying a quadrant of a plate" on page 38
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54

Configuring Mix parameters

About this topic The Mix task aspirates and dispenses a liquid sample in a single plate or reservoir repeatedly to mix the liquid. The Mix task can be used to mix samples or to wash the pipette tips in a reservoir, such as the MicroWash Reservoir or Auto Filling Reservoir. This topic describes how to set the task parameters.

Procedure *To configure the Mix task:*

1. With the protocol displayed in the **PrepWorks** work area, highlight the **Mix** task icon.

 Mix

   The PrepWorks Task Params palette displays the Mix settings.

2. Select the target shelf from the **Shelf** list.

3. To specify a liquid class to dispense, select the liquid class from the unlabeled list at the bottom of the **PrepWorks Task Params** palette.

4. Configure the volume parameters:

   a. **Pre-aspirate volume**. Type the volume of air (μL) to draw into the pipette tips before the first aspiration stroke.

   b. **Mixing volume**. Type the volume of fluid (μL) to be repeatedly aspirated and dispensed.

   c. **Blowout volume**. Type the volume (μL) dispensed from the tips following the last mix step. The tips are still in the wells.

5. **Mixing cycles**. Type the number of times to repeat the aspirate-dispense cycle.

6. In the **Quadrant** graphic, specify the quadrants from which to aspirate.

   Note: Quadrants appear after you select the shelf with the corresponding labware.

7. In the **Tips distance from well bottom** box, type the distance (mm) from the bottom of the well at which the mix operation will be performed.

8. Select one of the following options:

    ◆ **Tip Touch**. Adds a tip-touch operation following the last dispense.

    ◆ **Wash Tips**. Activates tip washing and allows you to specify the pump speeds for autofilling reservoirs.

    ◆ **Neither**. Turns off the **Tip Touch** and **Dispense to Waste** processes.

9. If you selected **Tip Touch**, specify the parameters:

    a. **Tip touch rise height**. Type the vertical distance (mm) for the tips to rise before tip touching commences.

    b. **Tip touch horizontal distance**. Type the horizontal distance (mm) for a tip to move. The value is based on the well diameter specified by the plate type, for example:

Value	Result
0	Tips move a horizontal distance equal to the well radius
> 0	Tips attempt to move past the well radius, which results in a more forceful tip touch
< 0	Tips move a distance less than the radius of the well, resulting in a lighter tip touch

    Note: The well radius is defined in the Labware Editor entry for the type of plate you are using.

    c. **Tip touch sides to touch**. Type the number of edges of the well to touch, where

    0 – None

    1 – North

    2 – North, East

    3 – North, East, South

    4 – North, East, South, West

10. If you selected **Wash Tips**, specify the parameters:

    a. **Inflow Pump**. Type the speed (%) of the pump filling the selected shelf.

    b. **Outflow Pump**. Type the speed (%) of the pump emptying the selected shelf.

    c. **Dispense to waste**. If you want to perform dispense operations outside the chimneys of a MicroWash Reservoir, select the check box.

11. In the area at the bottom of the **PrepWorks Task Params** palette, configure the remaining parameters:

    a. **Aspirate velocity**. Type the speed at which the fluid is aspirated during the mix cycle.

    b. **Aspirate acceleration**. Type the rate of increase in velocity before the aspirate velocity is reached.

c. **Dispense velocity.** Type the speed at which the fluid is dispensed during the mix cycle.

d. **Dispense acceleration**. Type the rate of increase in velocity before the dispense velocity is reached.

e. **Dynamic tip retraction**. Type the rate at which to lower the pipette head for each microliter aspirated and to raise the pipette head for each microliter dispensed.

For example, if you want the tips to move at the same rate of change that the liquid level is changing, use the following formula:

1/cross-sectional area of the well (mm2)

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Defining liquids	"Setting labware definitions" on page 59
Defining labware	"Setting labware definitions" on page 59
Configuring the VPrep Pipettor shelves	"Setting the Configure Shelves parameters" on page 34
Specifying a plate quadrant for the task	"Specifying a quadrant of a plate" on page 38
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54

Configuring Reservoir parameters

About this topic

The Reservoir task is only for use with Velocity11 Pump Modules and Weigh Shelf accessories.

The Reservoir task controls the automatic emptying or filling of a reservoir. The duration of the fill or empty operation can be specified by a simple timer or by using a Weigh Shelf to reach a target level in the reservoir.
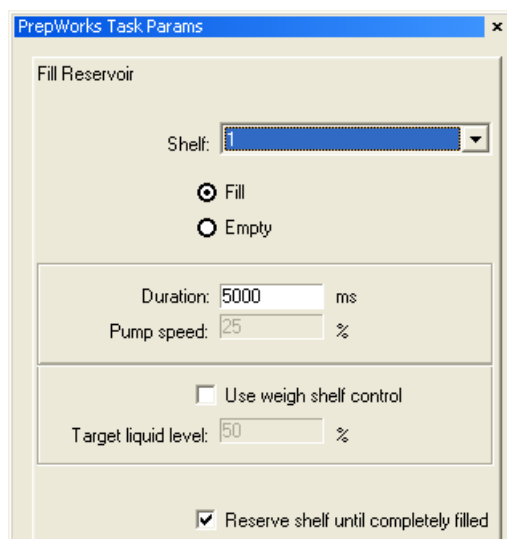
Procedure

To configure the Reservoir task:

1. With the protocol displayed in the **PrepWorks** work area, highlight the **Reservoir** task icon.

     Reservoir

    The PrepWorks Task Params palette displays the Reservoir settings.

2. Select the target shelf from the **Shelf** list.

3. Select one of the following options:

    ◆ **Fill**

    ◆ **Empty**

4. In the **Duration** box, type the amount of time (ms) to empty or fill the reservoir.

5. In the **Pump speed** box, type the speed as a percentage of the pump's total output to use for the fill or empty operation.

6. If the selected shelf is a Weigh Shelf:

    !! IMPORTANT !!   Only for use with a Velocity11 Weigh Shelf on the VPrep Pipettor.

    a. Select the **Use weigh shelf control** check box.

b. In the **Target liquid level** box, type the target level for the fill or empty operation.

When the target level is achieved or exceeded, the pump turns off. If the target level is not reached in the amount of time specified in the Duration parameter, the pump turns off and an error message displays.

7. Select the **Reserve shelf until completely filled** check box to prevent any other function from being performed on this shelf during the filling or emptying process.

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Configuring the VPrep Pipettor shelves	"Setting the Configure Shelves parameters" on page 34
Defining labware	"Setting labware definitions" on page 59
VPrep Pipettor accessories	*VPrep Pipetting System User Guide*
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Configuring a Loop

About this topic   The Loop task repeats a set of tasks within the protocol. This topic describes how to configure the Loop task.

Procedure   Tasks within a loop are indented to indicate the start and end of the loop.

To create a loop:

1. With the protocol displayed in the **PrepWorks** work area, drag and drop the **Loop** task icon from the **PrepWorks Tasks** palette to the desired position in the protocol.

2. Highlight the **Loop** task icon. The PrepWorks Task Params palette displays the Loop settings.
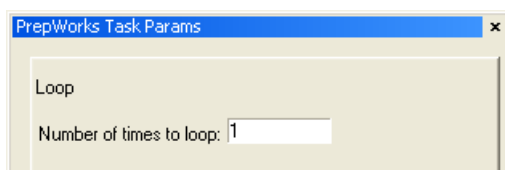
3. In the **Number of times to loop** box, type the number of times to repeat the loop within the protocol.

4. Drag and drop the first task in the loop from the **PrepWorks Tasks** palette onto the **Loop** task icon in the work area. The added task icons are nested under the **Loop** task icon.
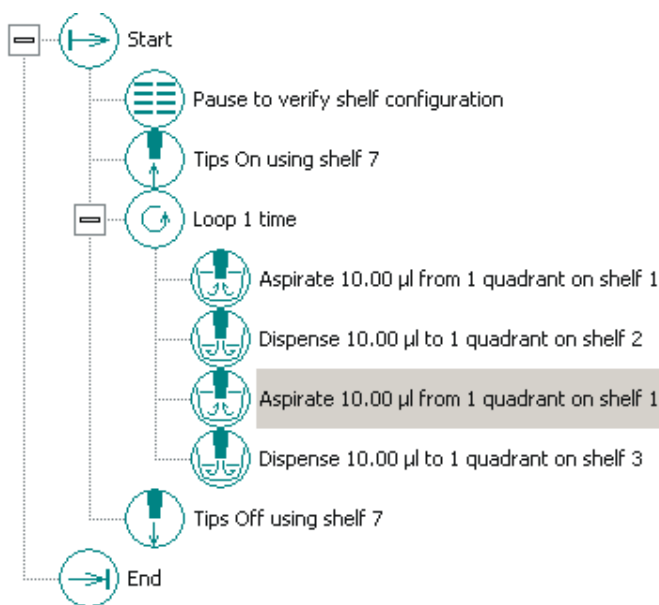
5. Repeat step 4 for each task that you want to include in the loop.

Note: To collapse or expand the list of tasks in the loop, click the + or – symbol next to the **Loop** task icon.

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Creating protocols	"Creating a protocol" on page 30
Defining labware	"Setting labware definitions" on page 59
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Configuring User Message parameters

About this topic   The User Message task pauses the protocol to display a message to the user. This topic describes how to configure the task parameters.

Procedure   *To configure the User Message task:*

1. With the protocol displayed in the **PrepWorks** work area, highlight the **User Message** task icon.
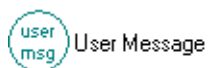
The PrepWorks Task Params palette displays the User Message settings.
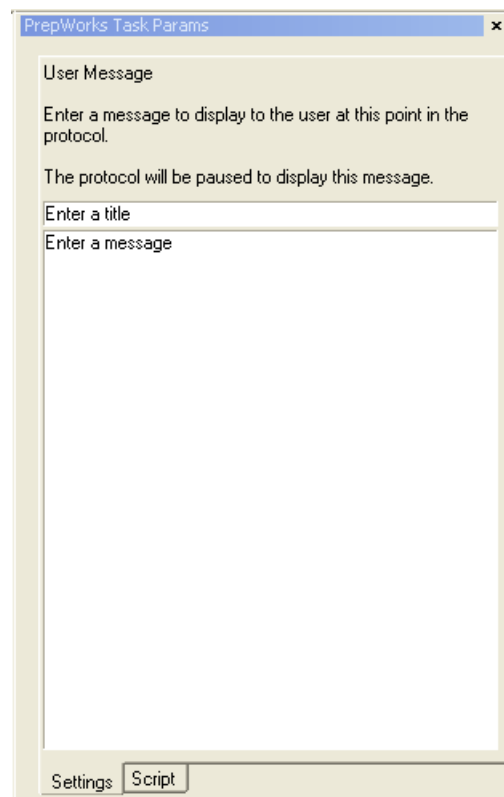
2. Type a title over the **Enter a title** text in the top box.

3. Type a message over the **Enter a message** text in the bottom box.

   When the User Message task runs, it pauses the protocol and displays the text message in a dialog box. The following figure shows an example.
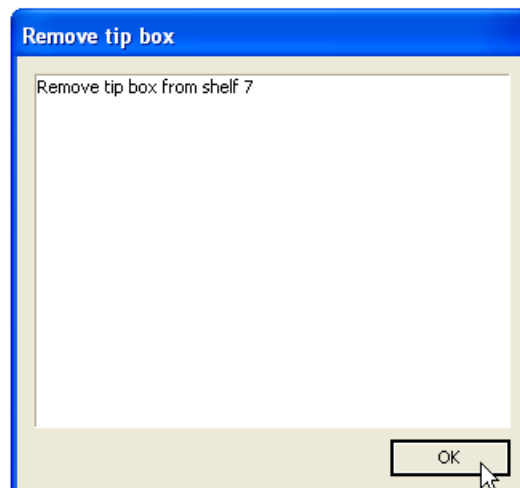
   The user must click **OK** to acknowledge the message and continue the protocol.

Related topics

| For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Creating protocols	"Creating a protocol" on page 30
Defining labware	"Setting labware definitions" on page 59
Compiling and saving a protocol	"Compiling and saving a protocol" on page 54
Running a protocol	"Workflow for performing a run" on page 24

Compiling and saving a protocol

About this topic

Before using the protocol, check for possible errors using the compile feature. The compile feature runs a diagnostic program that searches for several classes of errors in the protocol. This topic describes how to run the compile feature and save the protocol.

To create a PrepWorks protocol you must have Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Types of protocol errors

The following types of protocol errors can generate a compile error:

❑ Protocols that do not have a net pipetting volume of zero (there is an imbalance between the volume aspirated and the volume dispensed).

❑ Protocols that direct the pipettor outside of its allowable volume range.

❑ Protocols that direct the VPrep Pipettor to pipette from a shelf which has no labware assigned.

❑ Protocols that pipette without first attaching tips, or which perform a Tips On or Tips Off inappropriately.

Running the Compile feature

To run the Compile feature:

1. With the protocol displayed in the **PrepWorks** work area, click **Compile** on the toolbar.

2. If an **Error detected in protocol** message appears, do one of the following:

   ◆ Stop compiling and fix the error.

◆ Continue compiling and fix the error afterwards.

At the end of a compilation, the message **Compile complete** appears.

Note: If the log option settings are configured to show errors in the window, the message **Compile failed** appears in the **PrepWorks Log** palette after compiling a protocol that contains errors.

Saving a protocol

After the protocol has been compiled, you can save it so that it can be run at a later time.

To save a protocol:

1. With the protocol displayed in the **PrepWorks** work area, choose **File > Save**.

2. In the **Save As** dialog box, type the protocol file name and select the storage location.

   PrepWorks protocol files have the .prc file extension.

Related topics

For more information about…	See…
Configuring the compile options	"Configuring compiler options" on page 55
Configuring the log options	"Configuring log options" on page 19
Running a protocol	"Workflow for performing a run" on page 24
Logging in or out of PrepWorks	"Logging in and out" on page 17
User permissions	"Managing user accounts" on page 15

Configuring compiler options

About this topic

You can configure the compiler options to ignore certain types of errors.

To configure the compiler options, you must have PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Changing the Compiler Options

!! DAMAGE HAZARD !! **The default settings for the compiler assume that a protocol begins with no tips on and no volume in the tips. Some compiler options are useful when a protocol begins with different conditions. However, these conditions also defeat many safeguards, so use care when changing the Compiler Options settings.**

To change the compiler options:

1. On the toolbar in the PrepWorks window, click **Options**.

2. In the **PrepWorks Options** dialog box, click the **Compiler Options** tab.
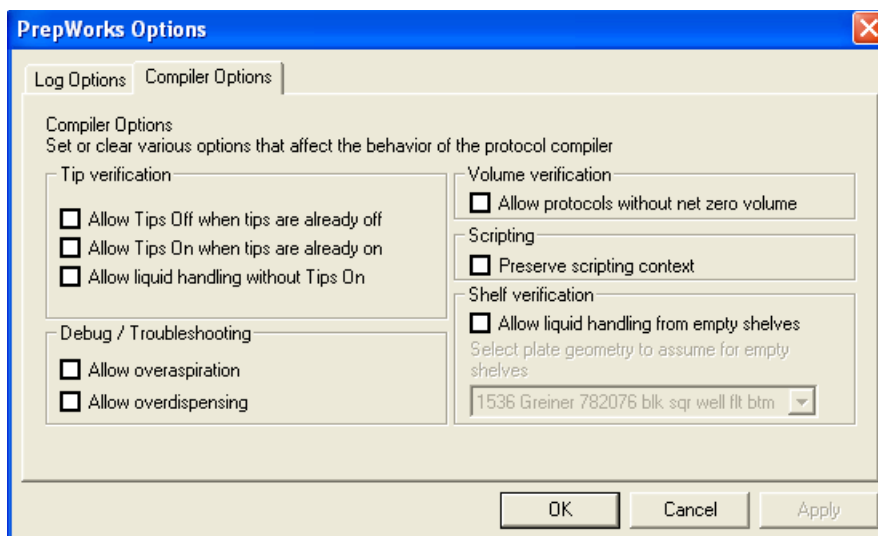
3. To specify changes under **Tip verification**, select the corresponding check box:

   ◆ **Allow Tips Off when tips are already on**. Enables multiple **Tips Off** commands, which the VPrep Pipettor will perform, even if there is not a **Tips On** command in between.

   ◆ **Allow Tips On when the tips are already on**. Enables multiple **Tips On** commands, which the VPrep Pipettor will perform, even if there is not a **Tips Off** command in between.

   ◆ **Allow liquid handling without Tips On**. Enables liquid handling even if a **Tips On** command is not included in the protocol.

4. To specify changes under **Debug/Troubleshooting**, select the corresponding check box:

   ◆ **Allow overaspiration**. Overrides a compiler error if tips aspirate more volume than the default capacity.

   ◆ **Allow overdispensing**. Overrides a compiler error if the tips contain less volume than the specified dispense volume.

5. If you want the protocol to continue operation even if tips contain residual liquid, select the **Volume verification – Allow protocols without net zero volume** check box.

6. If the protocol tasks include scripts, select the **Preserve scripting context** check box to retain scripting variable values from run to run.

7. If you want the compiler to assign default labware to unconfigured or empty shelves, select the **Shelf verification** parameters as follows:

   a. Select the **Allow liquid handling from empty shelves** check box.

    b.   In the **Plate geometry** list, select the default labware for the compiler to assign to any shelf that is unconfigured or is configured as empty.

8.   Click **OK** to save the settings and close the dialog box.

Related topics

For more information about…	See…
All the available protocol tasks in PrepWorks	"About protocol tasks" on page 32
Creating protocols	"Creating a protocol" on page 30
Running the compiler feature	"Compiling and saving a protocol" on page 54

Setting labware definitions

5

The procedures in this chapter can be performed by a user with PrepWorks Technician or Administrator privileges.

This chapter contains the following topics:

Labware Editor overview

About this topic

This topic introduces the Labware Editor features that are applicable for a standalone VPrep Pipettor. If you are using VPrep Pipettor as an integrated device, see the applicable user guide for your automation control software, such as the *VWorks User Guide*.

You must have Technician or Administrator privileges to use the Labware Editor to define labware. For more details on access levels, see "Managing user accounts" on page 15.

Labware Editor functions

You can use the Labware Editor to:

❑ View existing labware definitions or classes

❑ Edit labware definitions or classes

❑ Add new labware definitions or classes

❑ Delete labware definitions or classes

❑ Rename labware definitions or classes

Types of information stored

The Labware Editor stores two types of information:

❑ *Labware physical properties*. Plates, lids, tipboxes, and other labware have properties such as width, length, and number of wells.

❑ *Labware classes*. Sets of labware entries that are grouped so they are easier to manage.

Labware Editor pages

The Labware Editor has two tabbed pages:

❑ *Labware Entries page*. Displays the current list of labware definitions and allows you to add, delete, and rename labware definitions.

❑ *Labware Classes page*. Lists the current labware classes and allows you to create new classes and add and delete entries from each class.

Labware Entries page

Tabbed pages

When using VPrep Pipettor in standalone mode, the following tabs appear at the bottom of the Labware Entries page:

❑ *Plate Properties tab*. Use this tab to specify the labware thickness.

❑ *BenchCel tab and Stacker tab*. Not used by VPrep Pipettor in standalone mode.

❑ *VPrep/Well Definition tab*. Use this tab to specify the well geometry and dimensions for the labware and tip information for disposable tips.

❑ *Image tab*. Use this tab to add a labware image to the software interface for the selected labware definition.

❑ *Labware Classes tab.* Use this tab to add the selected labware definition to an existing labware class.
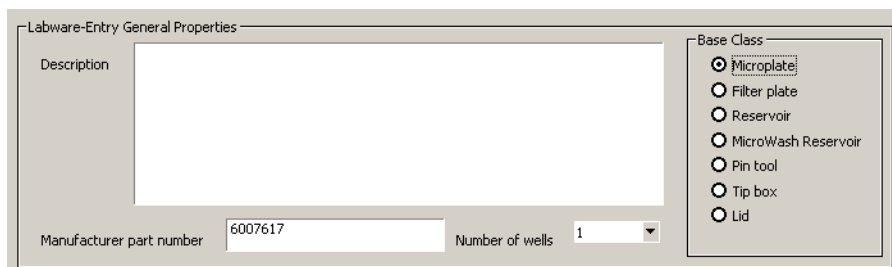
Labware list

The labware selection list appears in the left-hand column of each tabbed subpage.
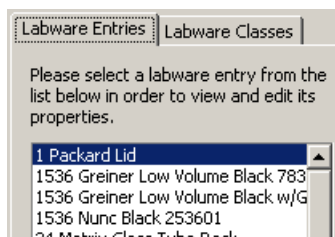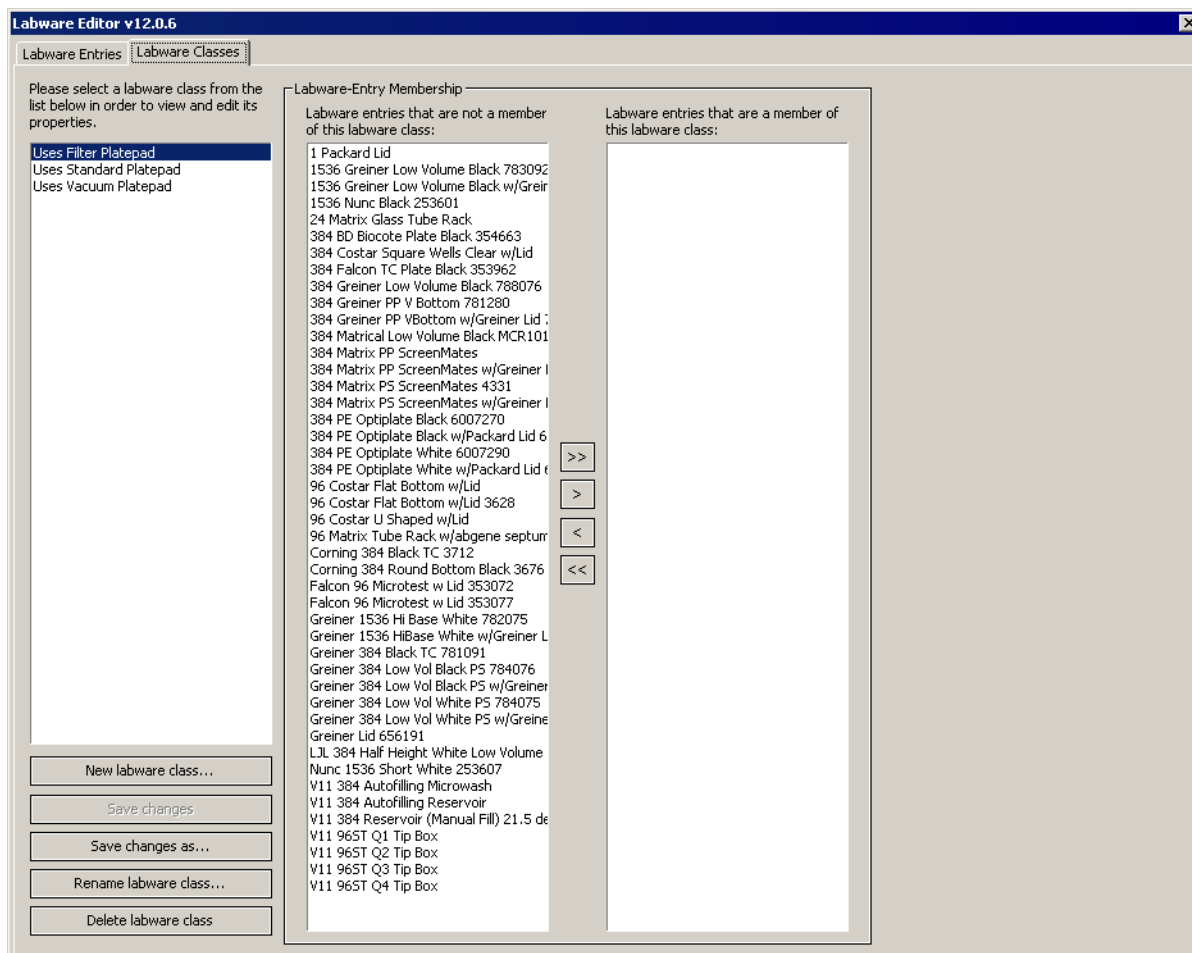

Labware-Entry General Properties box

The Labware-Entry General Properties box appears on each tabbed subpage.

Labware Classes page

In the Labware Classes page, you create labware classes and assign defined labware to a labware class.

Labware standards and considerations

!! IMPORTANT !! **Use only labware that meets the American National Standards Institute (ANSI) standards. For the latest labware standards, go to www.sbsonline.org. You can also contact the labware manufacturer to inquire about ANSI-compliant labware.**

In addition to the ANSI standards for labware, VPrep Pipettor shelves 1 and 2 have a height restriction to ensure clearance for the pipette head. The maximum height of the labware that you can use on shelves 1 and 2 is dependent on several factors, such as the type of pipette head, tip size, and type of shelf.

Note: The software displays an error message if you select a labware definition that exceeds the maximum allowable height for shelves 1 and 2.

Related information

For information about…	See…
Adding labware definitions	"Adding labware definitions" on page 63
Defining the properties for the labware entry	❑ "Defining general properties for labware" on page 67
	❑ "Defining plate properties" on page 68
	❑ "Defining the well properties" on page 69
	❑ "Inserting an image" on page 72

Adding labware definitions

About this topic

The first step in defining labware, such as a plate, is to create a labware entry. To save time when creating a new entry that is similar to an existing one, you can copy an existing labware entry.

This topic describes how to add a labware entry or copy an existing labware entry to create a new one.

The following procedures require PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Adding a labware entry

To add a labware definition:

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.

2. On the **Labware Entries** page, click **New labware entry** under the labware list on the left side.

   New labware entry...

3. In the **New Labware Entry** dialog box, type a name for the labware and click **OK**.

   The entry appears in the labware list.

```
384 ABGene deepwell
384 ABGene short well plate
384 Matrix clear polystyrene
384 REMP micro tube rack
384 REMP square well
96 ABGene deepwell block
96 ABGene tube rack (TRIPOS)
96 Matrix clear polystyrene
96 Matrix tube rack
96 Micronics tube rack (ALSB)
Costar 384 black flatbottom
Costar 384 polypro round bottom
Costar 96-well plate
Falcon 384 clear bottom
Falcon 384 clear polystyrene
Matrix 96-well Block-Polypro
MJ Research 384-well plate
New plate
Polyfiltronics 384 filter plate
Test plate
Tip Box Lid
V11 Autofilling Reservoir 384
V11 Autofilling Reservoir 96
V11 Manual Reservoir 384
V11 MicroWash 384
V11 MicroWash 96
V11 Tip Box 384d30
V11 Tip Box 384d40
V11 Tip Box 96d200
```

Copying a labware entry

To copy a labware entry:

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.

2. On the **Labware Entries** page, select a labware entry from the list on the left.

3. Click **Save changes as**.

4. In the **Save Labware Entry As** dialog box, type a name for the new entry, and click **OK**.

    The copied entry appears in the labware list. Edit the labware properties as required.

Related information

For information about…	See…
Defining the properties for the labware entry	❑ "Defining general properties for labware" on page 67
	❑ "Defining plate properties" on page 68
	❑ "Defining the well properties" on page 69
	❑ "Inserting an image" on page 72

Deleting a labware entry

About this topic
This topic describes how to delete a labware entry.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.
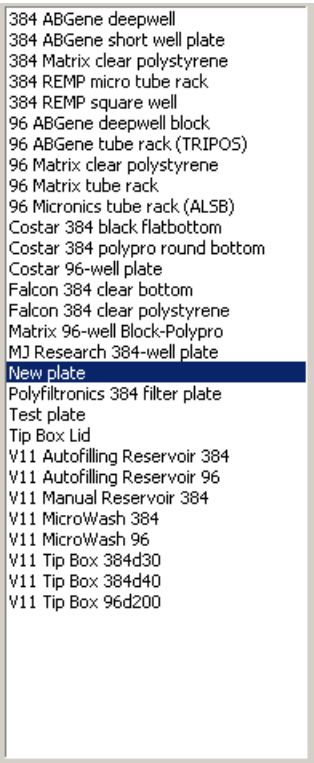
Before you start
Make sure that the entry you are deleting is not referenced in protocols.

!! IMPORTANT !!   If you delete a labware entry that is referenced in a protocol, the protocol will not run.

Procedure
To delete a labware entry:

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.

2. On the **Labware Entries** page, select the entry to be deleted from the labware list on the left side.

3. Click **Delete labware entry**.

4. Click **Yes** when the confirmation messages appears.

Related information

For information about…	See…
Adding labware entries	"Adding labware definitions" on page 63
Renaming labware entries	"Renaming a labware entry" on page 66
Defining the properties for the labware entry	❑ "Defining general properties for labware" on page 67 ❑ "Defining plate properties" on page 68 ❑ "Defining the well properties" on page 69 ❑ "Inserting an image" on page 72

Renaming a labware entry

About this topic

This topic describes how to change the name of a labware definition.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Before you start

Make sure that the entry that you are renaming is not referenced in protocols.

!! IMPORTANT !!   If you rename a labware entry that is referenced in a protocol, the protocol will not run.

Procedure

To rename a labware entry:

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.

2. On the **Labware Entries** page, select the entry to be renamed, and click **Rename labware entry**.

3. When the confirmation message appears, click **Yes**.

4. In the **Rename Labware Entry** dialog box, enter the new name for the labware and click **OK**.

Related information

For information about…	See…
Adding labware entries	"Adding labware definitions" on page 63
Deleting labware entries	"Deleting a labware entry" on page 65
Defining the properties for the labware entry	❑ "Defining general properties for labware" on page 67
	❑ "Defining plate properties" on page 68
	❑ "Defining the well properties" on page 69
	❑ "Inserting an image" on page 72

Defining general properties for labware

About this topic   After adding a labware entry, you define the general properties of the labware.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Procedure   *To define the general properties of a piece of labware:*

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.
2. On the **Labware Entries** page, select an entry from the list.
3. (Optional) Type a description in the **Description** box.
4. (Optional) In the **Manufacturer part number** box, type the part number for the labware.
5. In the **Number of wells** list, select the number of wells in the plate.
6. Under **Base Class**, select the type of labware.

   The option you select determines which properties are available.
7. Click **Save changes**.

Related information

For information about…	See…
Creating labware entries	"Adding labware definitions" on page 63
Deleting labware entries	"Deleting a labware entry" on page 65
What to do next	❑ "Defining plate properties" on page 68 ❑ "Defining the well properties" on page 69 ❑ "Inserting an image" on page 72

Defining plate properties

About this topic

This topic describes how to define properties for a plate or other piece of labware in the Labware Editor.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Defining plate properties

To define plate properties:

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.

2. On the **Labware Entries** page, ensure the labware entry is selected in the list on the left.

3. Click the **Plate Properties** tab.

   The following figure shows the **Plate Properties** sub-page parameters. Only the **Thickness** parameter is relevant for a standalone VPrep Pipettor.

4. Using calipers positioned across a corner of the plate, measure the dimension (mm) from the bottom surface to the top surface of the plate.

   !! IMPORTANT !!   Use calipers to carefully measure the labware you are defining in Labware Editor.

5. Type the value in the **Thickness** box.

6. Click **Save changes**.

For information about…	See…
Creating a labware entry	"Adding labware definitions" on page 63
Defining general properties	"Defining general properties for labware" on page 67
What to do next	"Defining the well properties" on page 69

Defining the well properties

About this topic

This topic describes how to define the well properties of a labware entry in Labware Editor.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Defining well properties

To define the well properties:

1. On the **PrepWorks** toolbar, click **Labware**. The **Labware Editor** opens.

2. On the **Labware Entries** page, ensure the entry is selected from the list on the left.

3. Click the **VPrep/Well Definition** tab.

4. Enter the values for the available parameters according to the type of labware you are defining, and then click **Save changes**.

The following figure shows the VPrep/Well Definition page and the table provides descriptions of each parameter.

!! IMPORTANT !! Use calipers to carefully measure the labware you are defining in the Labware Editor.

Property	Description
Well Dimensions	Enter all of the following values: ❑ **Well volume**. Type the value for the maximum fluid volume of one tip or well (μL). ❑ **Well depth**. Measure the internal well depth (mm) from the inside well bottom to the top of the plate. ❑ **Well diameter**. Using calipers measure the diameter of the well (mm).
Well Geometry	Select the option that corresponds to the shape of the wells: **Round** or **Square**.
Well-Bottom Shape	Select the option that corresponds to the shape of the well bottoms: **Rounded**, **Flat**, or **V-Shaped**.

Property	Description
Well Positions	**!! IMPORTANT !! The Teach tip box button in VPrep Diagnostics can change the values for the well positions in the labware definition.** The software supplies the following values automatically based on the Number of wells selection: ❑ **Row-wise teachpoint to well**. Distance (mm) from the teachpoint to the center of the A1 well along the x direction (number axis). This setting should be 0 mm for standard 96-well plates and 2.25 mm for standard 384-well plates. ❑ **Column-wise teachpoint to well**. Distance (mm) from the teachpoint to the center of the A1 well along the y direction (letter axis). This setting should be 0 mm for standard 96-well plates and 2.25 mm for standard 384-well plates. ❑ **Row-wise well to well**. Distance (mm) from well-center to well-center in the x direction. This setting should be 9 mm for standard 96-well plates and 4.5 mm for standard 384-well plates. ❑ **Column-wise well to well**. Distance (mm) from well-center to well-center in the y direction. This setting should be 9 mm for standard 96-well plates and 4.5 mm for standard 384-well plates.
Tip Parameters	If the Base Class is Tip box, specify one of the following: ❑ **Velocity11 tip box**. Type the tip volume (µL) in the **Disposable tip capacity** box. ❑ **3rd party tip box**. Type the tip volume (µL) in the **Disposable tip capacity** box. Use calipers to measure the tip length (mm), and type the value in the **Disposable tip length** box.

Related information

For information about…	See…
Creating a labware entry (before defining it)	"Adding labware definitions" on page 63
Defining general properties	"Defining general properties for labware" on page 67
Defining plate properties	"Defining plate properties" on page 68
What to do next	"Inserting an image" on page 72

Inserting an image

About this topic

This topic describes how to associate an image of the labware with the labware definition.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

Procedure

Make sure that the image file you want to add is in JPG, GIF, or BMP format.

To insert an image:

1. On the **PrepWorks** toolbar, click **Labware**. The Labware Editor opens.

2. On the **Labware Entries** page, ensure the labware entry is selected in the list on the left.

3. Click the **Image** tab.

4. Click the **Image filename** browse button (...).

5. In the **Open** dialog box, locate and double-click the image file.

   The image appears on the **Image** page.

6. Click **Save changes**.

The following figure shows an example of a labware image in the Labware Editor.

Related information

For information about...	See...
Creating a labware entry (before defining it)	"Adding labware definitions" on page 63
Defining general properties	"Defining general properties for labware" on page 67
What to do next	"Defining labware classes" on page 73

Defining labware classes

About this topic

This topic explains how to set up labware classes.

The procedure requires PrepWorks Technician or Administrator privileges. For more details on access levels, see "Managing user accounts" on page 15.

About labware classes

A labware class is a grouping of labware entries. The PrepWorks software comes with three labware classes already defined:

❑ Uses Filter Platepad

❑ Uses Standard Platepad

❑ Uses Vacuum Platepad

Initially, you can choose to use only these supplied classes. However, if you are using an accessory, you might want to create a new class to restrict the type of labware that can be used on that accessory.

Two places to define classes

You can view and define which plate types are associated with which labware classes in:

❑ The Labware Classes page

❑ The Labware Classes sub-page of the Labware Entries page

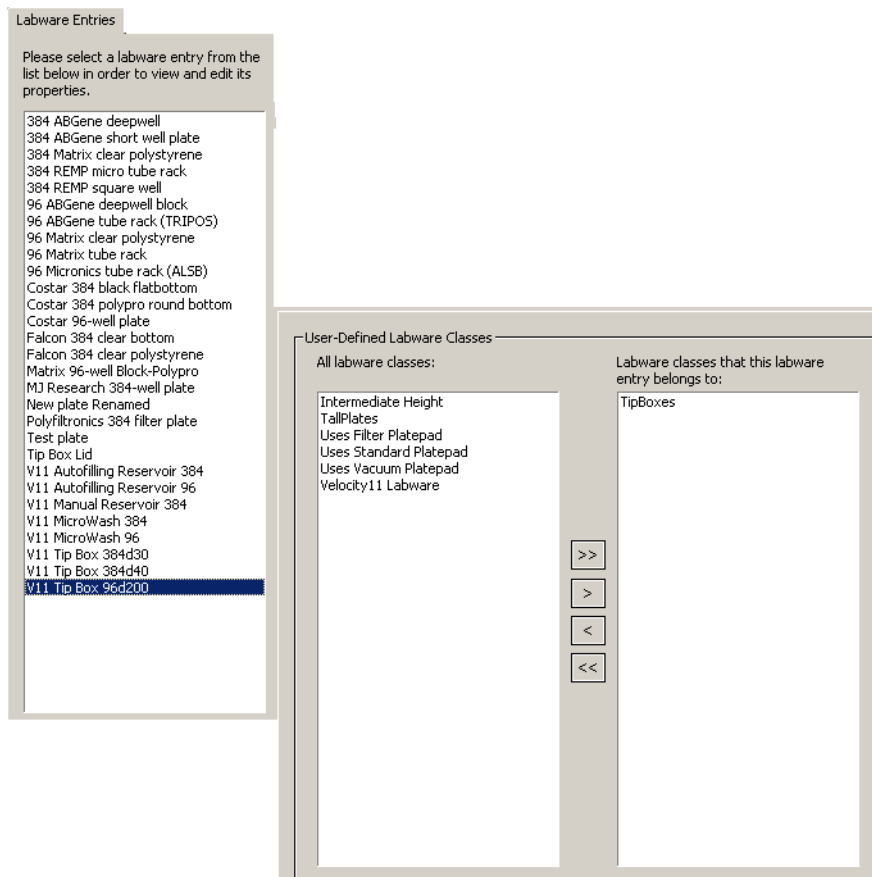These views present the same information in different ways.

About the Labware Classes page

In the Labware Classes page, if you select a class in the selection box on the left, the plate types that are members of that class are displayed in the far right-hand column.
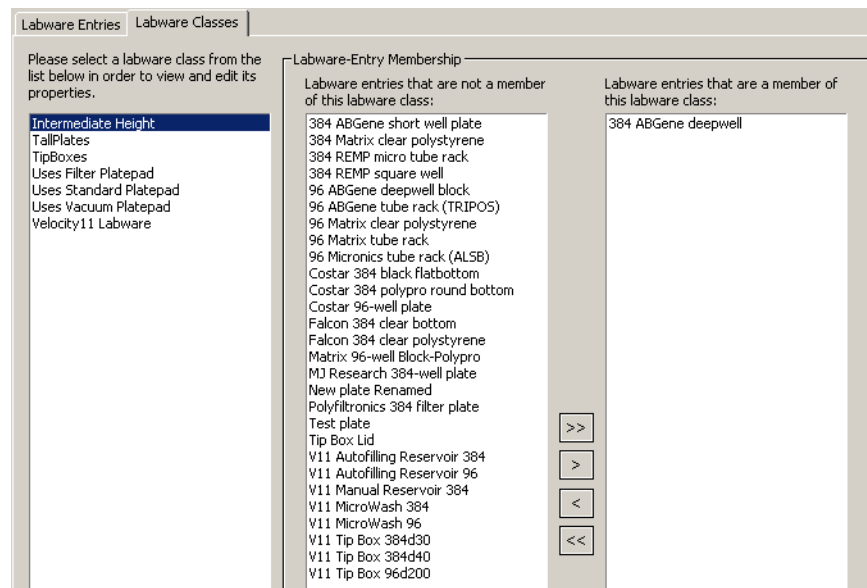
About the Labware Classes sub-page

On the **Labware Classes** sub-page, select an entry from the labware list on the left. The far right column displays the classes that include the selected labware entry.

```
Labware Entries

Please select a labware entry from the
list below in order to view and edit its
properties.

384 ABGene deepwell
384 ABGene short well plate
384 Matrix clear polystyrene
384 REMP micro tube rack
384 REMP square well
96 ABGene deepwell block
96 ABGene tube rack (TRIPOS)
96 Matrix clear polystyrene
96 Matrix tube rack
96 Micronics tube rack (ALSB)
Costar 384 black flatbottom
Costar 384 polypro round bottom
Costar 96-well plate
Falcon 384 clear bottom
Falcon 384 clear polystyrene
Matrix 96-well Block-Polypro
MJ Research 384-well plate
New plate Renamed
Polyfiltronics 384 filter plate
Test plate
Tip Box Lid
V11 Autofilling Reservoir 384
V11 Autofilling Reservoir 96
V11 Manual Reservoir 384
V11 MicroWash 384
V11 MicroWash 96
V11 Tip Box 384d30
V11 Tip Box 384d40
V11 Tip Box 96d200
```

```
User-Defined Labware Classes

All labware classes:                    Labware classes that this labware
                                        entry belongs to:

Intermediate Height                     TipBoxes
TallPlates
Uses Filter Platepad
Uses Standard Platepad
Uses Vacuum Platepad
Velocity11 Labware

                    [ >> ]
                    [ >  ]
                    [ <  ]
                    [ << ]
```

Procedure

To add a labware class:

1. On the **Labware Classes** page, click **New labware class**.

2. In the **New Labware Class** dialog box, type the class name and click **OK**.

   The entry appears in the list of labware classes.

To add labware entries to a class:

1. On the **Labware Classes** page or the **Labware Classes** subtab on the **Labware Entries** page, select entries from the middle column and then click **>**. To select more than one entry, use SHIFT + click or CTRL + click.

   To move all entries, click **> >**.

2. To save the changes, do one of the following:

◆ On the **Labware Entries** page **Labware Classes** subtab, click **Save changes**.

◆ On **Labware Classes** page, click **Save changes as** to save the new labware class.

Related information

For information about…	See…
Creating a labware entry	"Adding labware definitions" on page 63
Creating liquid classes	"Creating liquid classes" on page 79
Creating a protocol	"Creating a protocol" on page 30
Running a protocol	"Workflow for performing a run" on page 24
Contacting Velocity11	"Contacting Velocity11" on page ix

Setting liquid-handling definitions

6

The procedures in this chapter can be performed by a user with PrepWorks Technician or Administrator privileges.

This chapter contains the following topics:

❑ "About the Liquid Library Editor" on page 78

❑ "Creating liquid classes" on page 79

About the Liquid Library Editor

About this topic

The Liquid Library Editor is used to define pipetting properties for liquids (liquid classes).

You must have PrepWorks Technician or Administrator privileges to enter values for properties that affect pipetting speed, accuracy and precision.

Liquid classes

The values entered into the Liquid Library Editor can be saved as a collection of properties, known as a liquid class. Using liquid classes saves time when writing protocols because you do not have to enter values for the liquid properties.

When creating a protocol, you select the liquid class that you want to use within each liquid-handling task. Then, during the run, the liquid class values are referenced for pipetting operations.

Library location

The software saves the data that represents a liquid class to the liquid library, which is maintained in the Microsoft Windows registry.

Related information

For information about...	See...
Creating a liquid class	"Creating liquid classes" on page 79
Creating labware definitions	"Adding labware definitions" on page 63
Contacting Velocity11	"Contacting Velocity11" on page ix

Creating liquid classes

About this topic   This topic describes how to create a new liquid class.

This topic is for users with PrepWorks Administrator or Technician privileges. For more details on access levels, see "Managing user accounts" on page 15.

Types of liquid classes   You may want to create different classes for the following:

❑ Types of liquids, for example, water vs. DMSO

❑ Volumes of liquids, for example, 1 µL vs. 200 µL

❑ Liquid operations, for example, washing vs. mixing

!! INJURY HAZARD !!   Velocity11 products are intended to be used with non-hazardous aqueous liquids. Contact Velocity11 before using any non-aqueous solvents, or solvents generally considered to be hazardous.

Creating a liquid class   The following figure shows the Liquid Library Editor window.
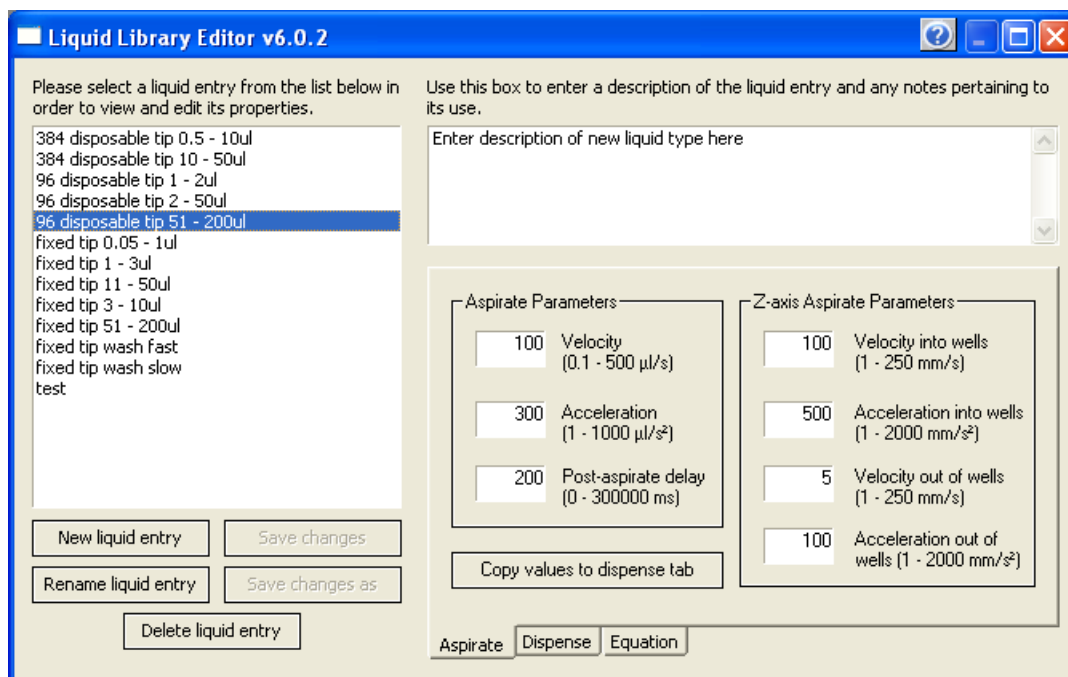
To create a liquid class:

1. On the **PrepWorks** toolbar, click **Liquids**. The Liquid Library Editor opens.

2. Click **New liquid entry**.

3. In the **New Liquid Entry** dialog box, type a name for the liquid class and click **OK**. The entry appears in the liquid list on the left.

4. In the top right box, type a description for the new liquid entry.

5. Define the aspirate and dispense parameters using the guidelines in the following sections.

6. Click **Save changes**.

Defining aspirate parameters

To define the aspirate parameters:

1. On the **Aspirate** tab, enter the aspirate parameter values. See the following table for guidelines.

If you want to use the same parameters for dispensing, click **Copy values to dispense tab**.

Aspirate parameter	Definition
Velocity	Specifies the speed (µL/s) of the aspiration stroke.
Acceleration	Specifies acceleration (µL/s²) during the aspiration stroke.
Post-aspirate delay	Specifies the time (ms) the pipettor waits after aspiration is complete before moving the tips out of the wells.
Z-axis velocity into wells	Specifies how fast the pipettor moves (mm/s) as the tips enter the wells.
Z-axis acceleration into wells	Specifies the acceleration (mm/s²) of the pipettor as the tips move into the wells.
Z-axis velocity out of wells	Specifies how fast (mm/s) the tips leave the wells.
Z-axis acceleration out of wells	Specifies the pipettor acceleration (mm/s²) as the tips move out of the wells.

Defining dispense parameters

To define the dispense parameters:

1. Click the **Dispense** tab, and enter the dispense parameter values. See the following table for guidelines.

If you want to use the same parameters for aspirating, click **Copy values to aspirate tab**.

Dispense parameter	Definition
Velocity	Specifies the maximum speed of the dispensing stroke (µL/s).
Acceleration	Specifies acceleration (µL/s²) during the dispensing stroke.
Z-axis velocity into wells	Specifies how fast the pipettor moves (mm/s) as the tips enter the wells.

Dispense parameter	Definition
Z-axis acceleration into wells	Specifies the acceleration of the pipettor (mm/s^2) as the tips enter the wells.
Z-axis velocity out of wells	Specifies how fast the pipettor moves (mm/s) as the tips leave the wells.
Z-axis acceleration out of wells	Specifies the acceleration of the pipettor (mm/s^2) as the tips leave the wells.
Post-dispense delay	Specifies the time (ms) the pipettor waits after the dispense stroke before moving the tips out of the wells.

Related information

For information about…	See…
Defining labware	"Labware Editor overview" on page 60
Creating a protocol	"Creating a protocol" on page 30
Running a protocol	"Workflow for performing a run" on page 24
Contacting Velocity11	"Contacting Velocity11" on page ix

Using the automation interface

7

This chapter is for use by third-party integrators who wish to control the VPrep Pipettor using their own interface.

This chapter contains the following topics:

Creating the PrepWorks object with Visual Basic

About this topic This topic explains how to use Visual Basic to create objects to automate control of the VPrep Pipettor with your interface. However, you can use any compatible programming software.

After you perform the following procedure, define the PrepWorks properties, methods, and events.

Procedure *To integrate the PrepWorks library in Visual Basic*

1. Start PrepWorks to register the PrepWorks type library.

   Note: By starting PrepWorks for the first time, the necessary operating system registry files are created on your computer.

2. Start Microsoft Visual Basic and add a reference to the PrepWorks type library as follows:

   a. In the **Microsoft Visual Basic** window, choose **Tools > References**. The References dialog box appears.
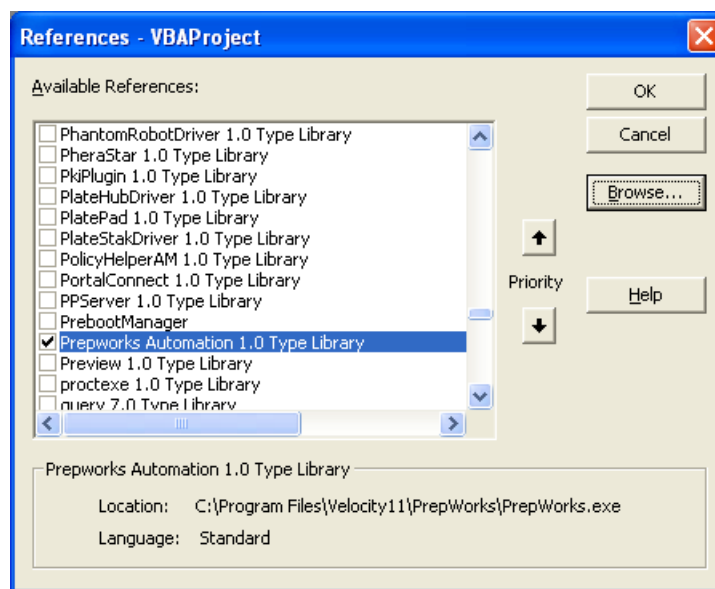
   b. In the **References** dialog box, click **Browse**.

   c. In the **Add References** dialog box, select **Files of type: All Files**.

   d. Navigate to the PrepWorks installation location, select **PrepWorks.exe**, and then click **Open**.

You will now be able to create PrepWorks.Application objects in the Visual Basic Project:

Example	
	`Dim WithEvents PrepObj As PrepWorks.Application`
	`Set PrepObj = new PrepWorks.Application`

Related topics

For more information about…	See…
Properties, Methods, and Events	❑ "Properties" on page 85 ❑ "Methods" on page 86 ❑ "Events" on page 88
Contacting technical support	"Reporting problems" on page ix

Properties

About this topic

This topic defines the properties, methods, and events that are used to program your interface to control the VPrep Pipettor through PrepWorks.

Property descriptions

Long Visible (Read/Write)

Description	Not Zero = Show PrepWorks editor windowZero (default) = Hide PrepWorks editor window
Example	PrepObj.Visible = True

Long EditorHandle (Read Only)

Description	Retrieves the HWnd of the PrepWorks editor window for use in API calls
Example	Long editorHWnd = PrepObj.EditorHandle

Related topics

For more information about…	See…
Using Microsoft Visual Basic	"Creating the PrepWorks object with Visual Basic" on page 84
Methods and Events	❑ "Methods" on page 86 ❑ "Events" on page 88
Contacting technical support	"Reporting problems" on page ix

Methods

Method descriptions

CompileProtocol (Path as String

Description	Compiles the specified protocol
Arguments	Path as String = Path to protocol file
Example	PrepObj.CompileProtocol "c:\test.prc"

RunProtocol (Path as String)

Description	Compiles and then executes the specified protocol
Arguments	Path as String = Path to protocol file
Example	PrepObj.RunProtocol "c:\test.prc"

InitializeHardware (Profile as String)

Description	Initializes or reinitializes the VPrep Pipettor hardware. Homes motors.
Arguments	Profile as String = Valid profile name, or null for last profile
Example	PrepObj.InitializeHardware "001-N-96F50"

Login (UserName as String, Password as String)

Description	Logs in a user without presenting a login dialog
Arguments	UserName as String = UserName Password as String = Password
Example	PrepObj.Login "Administrator", "Velocity11"

ShowLoginDialog

Description	Presents the login dialog which allows a user to log in or change passwords
Example	PrepObj.ShowLoginDialog

Logout

Description	Logs out the current user
Example	PrepObj.Logout

PauseProtocol

Description	Pauses or unpauses the currently executing protocol
Example	PrepObj.PauseProtocol

ShowDiagnosticsDialog

Description	Displays the PrepWorks hardware diagnostics dialog
Example	PrepObj.ShowDiagnosticsDialog

ShowLabwareDialog

Description	Displays the PrepWorks labware dialog
Example	PrepObj.ShowLabwareDialog

ShowLiquidDialog

Description	Displays the PrepWorks liquid classes dialog
Example	PrepObj.ShowLiquidDialog

ShowOptionsDialog

Description	Displays the PrepWorks options dialog
Example	PrepObj.ShowOptionsDialog

ShowSecurityDialog

Description	Displays the PrepWorks security editor dialog
Example	PrepObj.ShowSecurityDialog

StopProtocol

Description	Aborts the currently executing protocol
Example	PrepObj.StopProtocol

Related topics

For more information about…	See…
Using Microsoft Visual Basic	"Creating the PrepWorks object with Visual Basic" on page 84
Properties and Events	❑ "Properties" on page 85 ❑ "Events" on page 88
Contacting technical support	"Reporting problems" on page ix

Events

Events	**ConfigureShelves (ByVal shelfArray As Variant, displayDlg As Long)**

Description	Occurs when a protocol executes the ConfigureShelves task
Arguments	ByVal shelfArray as Variant = array of strings representing the labware being associated with the indexed shelf
	DisplayDlg as Long = if not zero, PrepWorks will display the shelf configuration confirmation dialog, provided that the protocol demands this. If zero, PrepWorks will not display the shelf configuration confirmation dialog
Example	Dim i As Integer
	Dim lower As Integer
	lower = LBound(shelfArray)
	For i = lower To UBound(shelfArray)
	MsgBox "Shelf " + CStr(1 + i - lower) + ": " + shelfArray(i)
	Next
	displayDlg = False

FatalProtocolError (ByVal description As String, displayDlg As Long)

Description	Occurs when PrepWorks detects a fatal error during the execution of a protocol
Arguments	ByVal description as String= description of error DisplayDlg as Long = if not zero, PrepWorks will display an error messagebox. If zero, PrepWorks will not display an error dialog.
Example	MsgBox "Fatal Error: " + description
	displayDlg = False

HardwareError (ByVal errorCode As Long, ByVal description As String, displayDlg As Long, actionToTake As Long

Description	Occurs when the VPrep Pipettor hardware detects an error condition
Arguments	ByVal errorCode as Long = general errorCode
	ByVal description as String = description of error
	displayDlg as Long = if not zero, PrepWorks will display a Retry/Ignore/Abort dialog, and ignore the actionToTake argument. If zero, PrepWorks will not display the dialog, but will instead use the actionToTake argument
	actionToTake as Long = (IDABORT = 3), (IDRETRY = 4), (IDIGNORE = 5).
	Any other values will be treated as IDRETRY

Example	Private Const IDABORT = 3
	MsgBox " ERROR (" + CStr(errorCode) + "): " + description
	displayDlg = False
	actionToTake = IDABORT

InitializationComplete ()

Description	Occurs after a call to InitializeHardware, if the initialization is successful. If the initialization fails, a HardwareError will occur instead.

LogMessage (ByVal message As String, ByVal level As Integer)

Description	Generic logging event. Most everything that PrepWorks does generates a LogMessage event
Arguments	ByVal message as String = text of log message
	ByVal level as Integer = category of log event, useful for filtering: (PROCESS=0), (FATALERROR=1), (ERROR=2), (DEBUG=3)
Example	MsgBox message + " : Level " + CStr(level)

ProtocolComplete()

Description	Occurs upon completion of protocol, whether by completion, stop due to error, or stop due to user abort.

RecoverableProtocolError (ByVal description As String, displayDlg As Long, actionToTake As Long)

Description	Occurs when a protocol error occurs that PrepWorks believes can be resolved by user intervention
Arguments	ByVal description as String = description of error
	displayDlg as Long = if not zero, PrepWorks will display a Retry/Ignore/Abort dialog, and ignore the actionToTake argument. If zero, PrepWorks will not display the dialog, but will instead use the actionToTake argument
	actionToTake as Long = (IDABORT = 3), (IDRETRY = 4), (IDIGNORE = 5).
	Any other values will be treated as IDRETRY
Example	MsgBox "Ignoring error: " + description
	displayDlg = False
	actionToTake = IDIGNORE

UserMessage (ByVal message As String, ByVal title As String, displayDlg As Long)

Description	Occurs when a protocol executes the UserMessage task. This can be used to generate arbitrary messages to the automation client
Arguments	ByVal message as String = message parameter of UserMessage task
	ByVal title as String = title parameter of UserMessage task
	displayDlg as Long = if not zero, PrepWorks will display a dialog with the message and title. If zero, PrepWorks will not display a dialog
Example	MsgBox "Protocol User Message (" + title + "): " + message
	displayDlg = Fals

Related topics

For more information about…	See…
Using Microsoft Visual Basic	"Creating the PrepWorks object with Visual Basic" on page 84
Properties and Methods	❑ "Properties" on page 85
	❑ "Methods" on page 86
Contacting technical support	"Reporting problems" on page ix

Glossary

Term	Definition
profile	A Microsoft Windows registry entry that contains the communication settings needed for communication between a device and the Velocity11 lab automation software.
protocol	A sequence of tasks to be performed by the lab automation system.
run	A process in which one or more microplates are processed. In a standalone device, the run consists of one cycle. In a lab automation system, a run can consist of multiple cycles that are automated.
task parameters	The parameters associated with each task in a protocol. For example, in an aspirate task, the parameters include the volume (uL).
teachpoint	A teachpoint is a set of coordinates that define a set of coordinates that tells the pipette head exactly where to move to perform a task for a particular type of labware.

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Note: You can also search our technical documentation on our website at www.velocity11.com.

Agilent Technologies

User Guide

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