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MiniMapper V1.1 User Guide

13602089 Version 2 06-03



METTLER TOLEDO

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MiniMapper™ V1.1

13602089 Version 2 06-03

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1. Introduction

MiniMapper™ automates parallel synthesis. It provides:

- Accurate liquid handling
- Variable solvent availability
- 3-channel cannula that facilitates septum piercing, venting and inert gas dispersing, and prevents cross contamination
- Easy-to-use equipment and interface in a compact workstation
- This manual describes how to use the MiniMapper™.

1.1. Safety

1.1.1. Avoiding Injury

- Do not place your head or arms between the deck and top gantry of the machine while a job is running, while running manual steps, or when moving the robot head to the maintenance or home positions.
- Do not place your hand or any other object below the cannula at any time. The cannula is sharp and could pierce through the object when the arm moves up and down. Use caution when handling cannula.
- Do not place your head or arms above the machine while it is running.
- A stationary robot head does not necessarily mean that the job is complete. Always check the **State** field in the **Execution** window to confirm that the job has finished.
- Do not touch the syringe pump while it is moving. Keep your hands clear when the syringe pump is moving to syringe change position
- Do not remove the front or back cover of the MiniMapper™

1.1.2. General

- Only use consumables supplied by Mettler-Toledo AutoChem on MiniMapper.
- Do not change MiniMapper software files.
- Complete training through Mettler-Toledo AutoChem before operating MiniMapper™.
- Check with Mettler-Toledo AutoChem before running a machine affected by chemical corrosion or mechanical damage.

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1.1.3. Solvent Safety

When working with solvents always follow these guidelines.

- Do not use concentrated mineral acids such as sulfuric acid, nitric acid, and hydrochloric acid.
- Do not use solutions of concentrated bases such as hydroxide and potassium hydroxide.
- Do not expose the workstation to corrosive gases such as hydrogen chloride and hydrogen fluoride.
- Only run MiniMapper in a well ventilated fume-hood.
- Do not leave open solvent vessels on the deck unless MiniMapper is on and the fume-hood is operating.
- Disconnect and seal or empty the waste bottle and online solvent bottles when the fume hood is not running.
- Always leave a minimum of 1inch of clearance behind the machine to allow good ventilation.
- In the event of a large spill of volatile solvent (>500ml) on the deck of MiniMapper, vacate the area and allow machine to dry off with the fume-hood running.
- In the event of a large spill of non-volatile solvent (>500ml) on the deck of MiniMapper, clean up the solvent from the deck and underneath the machine and ensure that the area is well ventilated.
- When using corrosive reagents such as TFA:
- Do not pump corrosive reagents using the syringe and valve, instead, pipette them from the deck.
- Do not leave corrosive reagents on the deck after use or leave them open on the deck for long periods of time.
- Use **Clean** steps after each operation using a corrosive reagent
- Clean the workstation thoroughly after using corrosive reagents including the lines, cannula, deck to remove all traces of the reagent.

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1.1.4. Using the Emergency Stop

In the event of an emergency, MiniMapper can be stopped without losing the contents of the vessels. Follow the instructions below to stop a job in an emergency.

1. Click the **Halt**  button or push the red **Emergency Stop** button on the front of the workstation.
   *The MiniMapper immediately stops whatever it is doing and goes into **Error** mode.*
2. Click the **Recover**  button to reset the workstation.
   The robot head moves to the home position.
3. Click the **Manual Operations**  button and select **Empty Syringe** from the drop down menu.
   *The **Empty Syringe** dialog box displays.*
4. Specify which vial to dispense the sample to, by selecting it in the **Deck Layout** frame and dragging it into the **Empty Syringe** dialog box.
5. Click the **OK** button.
   MiniMapper dispenses the sample into the selected vial.
6. Select **Manual Wash** from the **Manual Operations** drop down menu and specify the parameters in the dialog box that displays.
   MiniMapper washes the cannula and syringe.
7. Click the **Execution Tools** button to resume the job.
   *The **Execution Tools** dialog box displays.*
8. Select the **Step** and **Sample** where the job was halted to begin the job again from that point.
   *The **Runmarker** moves to the specified step and sample.*
9. Click the **Run**  button to restart the Job.

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1.2. The MiniMapper Workstation

The MiniMapper workstation is made up of hardware and software components. The diagrams below illustrate the MiniMapper hardware.

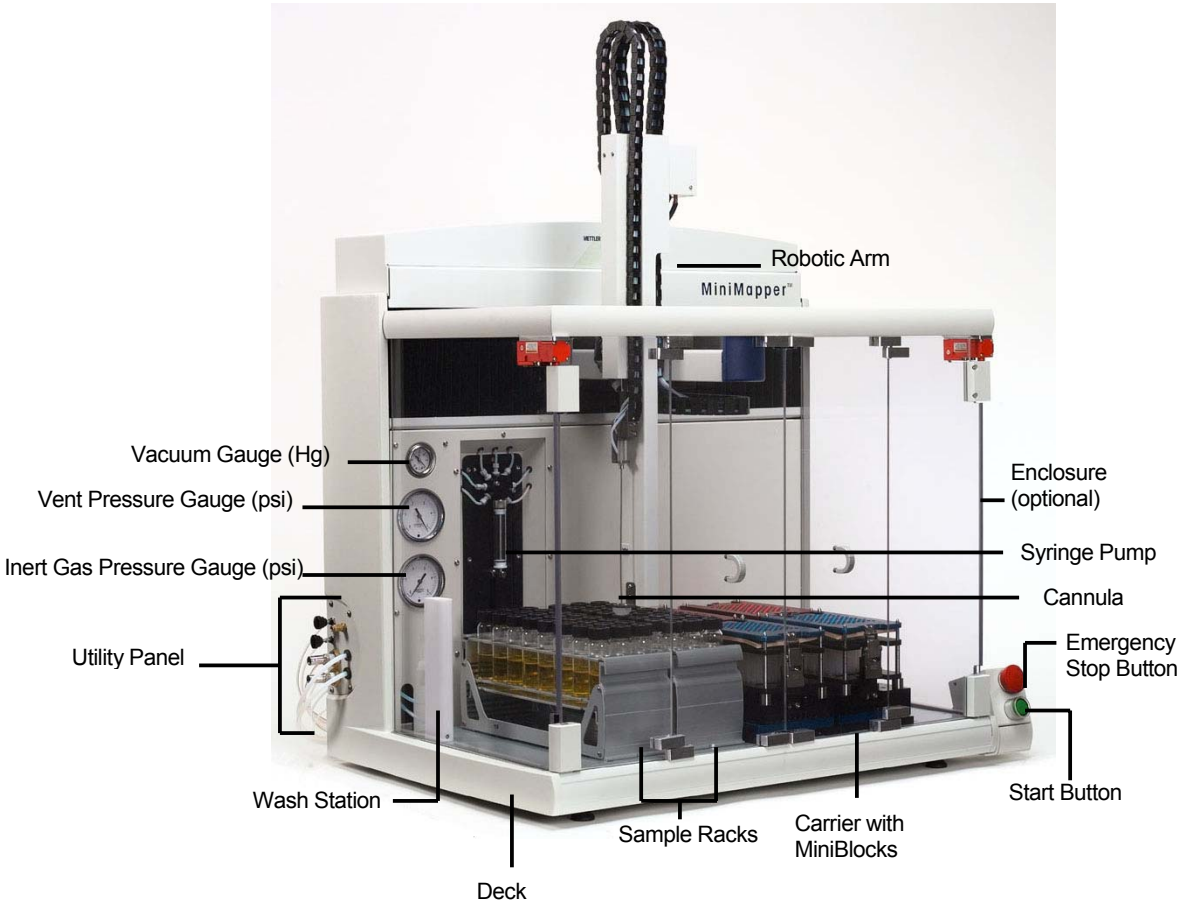


Figure 1-1: MiniMapper Workstation with Enclosure

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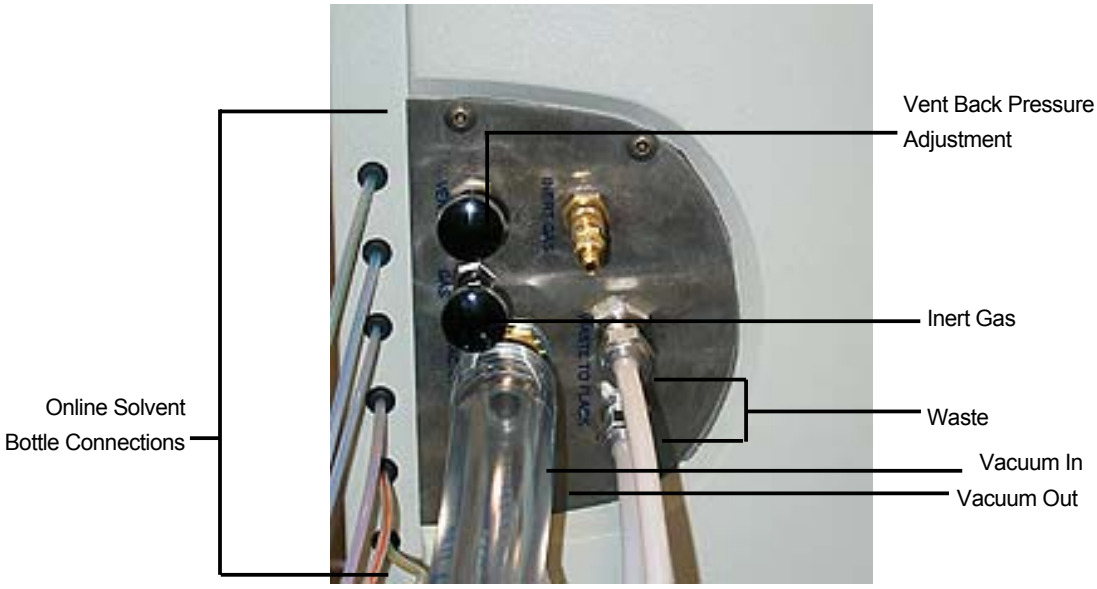


Figure 1-2: Utility Panel Close Up

1.3. Installing the MiniMapper

1.3.1. Getting Started

Unpack the system and verify that all parts are present and undamaged.

- Inspect the outside of the crate and any boxes for indications of damage.
- Inspect the Tilt and Shock indicators on the outside of the MiniMapper crate.
- Check all items on shipping list are present and in good condition
- Visually inspect the MiniMapper for any signs of damage
- Inspect for any loose/broken components, such as wiring and connections.

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1.3.2. Setting Up the System

Make connections.

1. Connect the Power, Monitor, Keyboard, and Mouse cables to the **Electrical Connection Panel**.

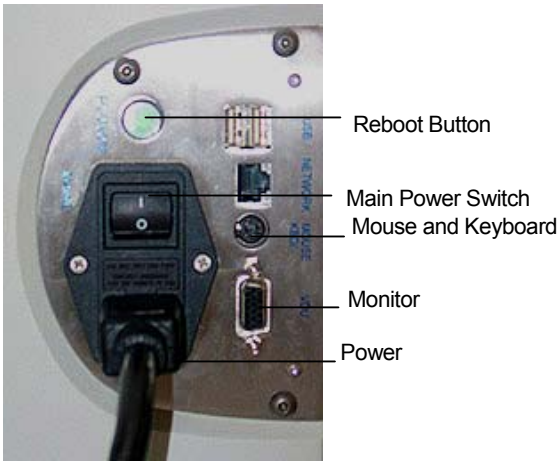


Figure 1-3: Electrical Connection Panel

2. Connect the Inert Gas, Vacuum, Waste, and Liquid Reagent Bottle tubes to the **Utility Panel**. See Figure 1-2: Utility Panel Close Up.

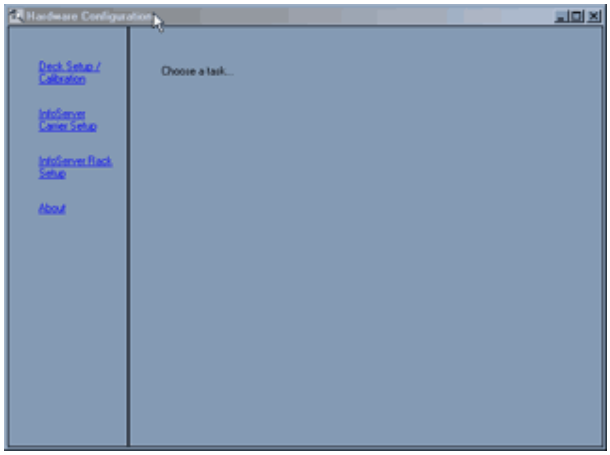
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1.3.3. Calibrating the Deck

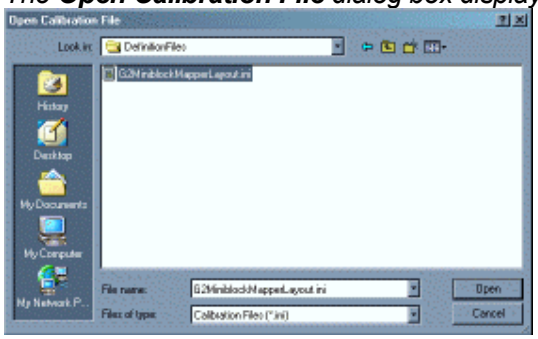
The MiniMapper must be taught the dimensions of the deck in order to move the robot arm correctly. This configuration is performed by Mettler-Toledo AutoChem, however, it may need to be verified or calibrated occasionally. The hardware Configuration Tool allows this calibration or teaching. The deck is normally set-up using three high positions and one low position.

Follow the instructions below to calibrate the deck.

1. Click the **Hardware Configuration** shortcut  on the Desktop.
   *The **Hardware Configuration** tool opens.*

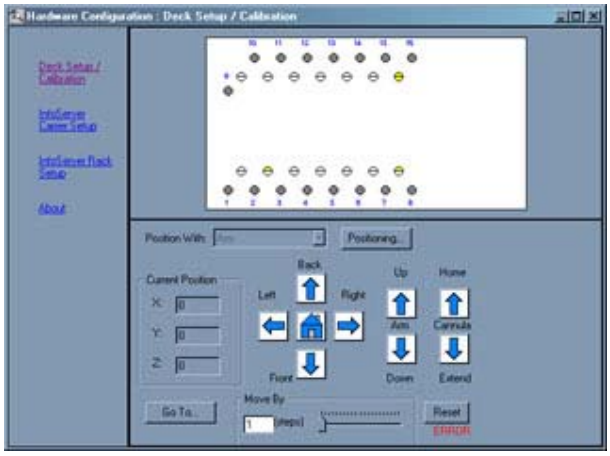


2. Click **Deck Setup / Calibration**.
   *The **Open Calibration File** dialog box displays:*



3. Navigate to C:\MTAutoChem\MiniMapper\Layout\DefinitionFiles\G2MiniBlockMapperLayout.ini and click the **Open** button.
   *The **Deck Setup/Calibration** window displays and MiniMapper automatically homes the X, Y, and Z axes.*

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Note: If MiniMapper does not home the axes, click the **Reset** button Reset.

Click the **Home** button  to move the axes to the **Home** position.

4. Fit the insert pin into the foot of the robot arm .

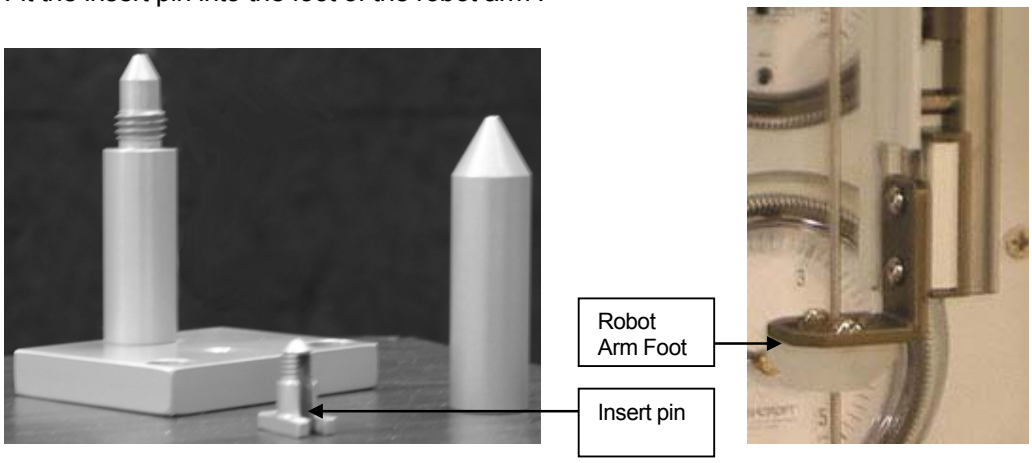


Figure 1-4: Deck Calibration Tool and Robot Arm Foot

5. Remove the top of the deck calibration tool and place the base piece on locator pins 16 and 17. The corresponding point illustrated in the software diagram should be highlighted in yellow, indicating that a high and a low point have already been taught.
6. Right click on the point and select **Go To Taught**, then **low**.
7. Check visually to determine if the taught point is correct. If not, adjust the robot position using the arrow keys.
8. Right click on the pin and select **Teach,** then **Low** to teach the new position.
9. Replace the top of the deck calibration tool and repeat the steps 6 through 8 for the three high positions, indicated by and .
10. Close the **Hardware Configuration** window when finished verifying and setting points. *A confirmation dialog box displays.*
11. Click the **Yes** button to save the changes.
12. Remove the insert pin from the robot arm foot.

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1.3.4. Adjusting the Vent and Gas Pressure

Occasionally the Vent Pressure or the Argon Gas Pressure will need to be adjusted.

Use the following guidelines for setting the pressures.

- Typically the Argon gas setting should be slightly higher than the vent pressure.
- Use higher pressure for large vessels and lower pressure for smaller vessels.
- Settings of 2 psi for the vent and 2.5 psi for the Argon gas work well for most vessels.

Follow the steps below to adjust the vent or gas pressure. See 1.2 The MiniMapper Workstation to see the locations of the pressure gauges and the adjustment knobs.

1. Loosen the locking nut.
2. Turn the adjustment knob until the dial reads the desired value.
3. Tighten the locking nut to lock the adjustment knob into place.

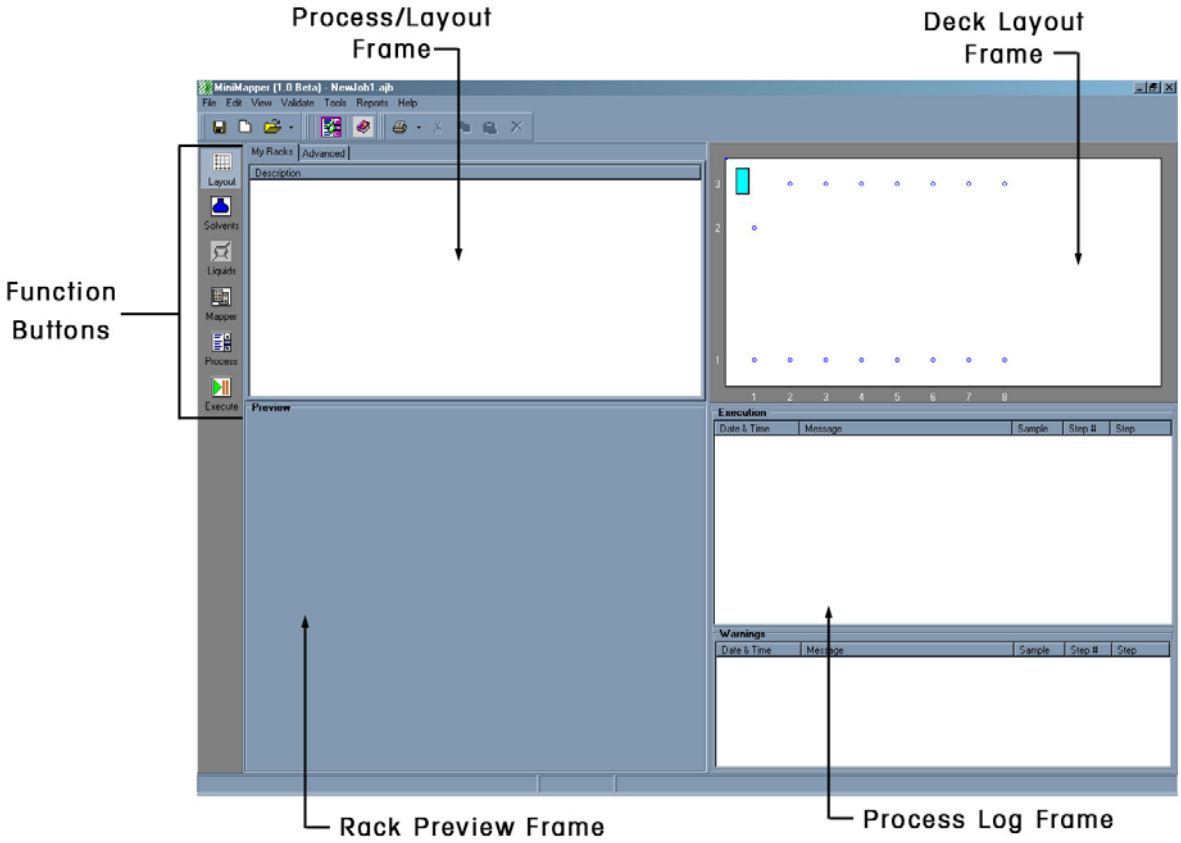
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1.3.5. Starting the System

1. **Turn on the main power using the power switch on the** Electrical Connection Panel**. See** Figure 1-3: Electrical Connection Panel.
2. Press the power switch on the monitor to turn it on.
   The screen displays a blinking cursor and the Controller PC boots up.

> **Note:** If the Controller PC does not properly boot, press the green **Reboot** button on the **Electrical Connection Panel**.

3. Press the green **Start** button on the front of the workstation.
4. Login to the operating system. The default **User ID** is "MiniMapper" used with no password.



5. Double click the MiniMapper icon displayed on the Desktop to start the program.The MiniMapper interface displays:
6. Prime the solvent lines.

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1.4. Help and Further Information

If you have queries or comments that are not addressed in this user guide, please contact your local Mettler-Toledo office or visit our web site at www.mtautochem.com.

For technical support issues, please see section 7.5 Contacting Customer Support.

1.5. Document Conventions

1.5.1. Formatting Conventions

The following conventions are used in this document.

1. **Notes** designate alternate instructions or caveats.
2. **Tips** designate extra information that may be useful.
3. **Bold font** designates step, window, frame, field, and button names and other terms that appear in the MiniMapper software user interface.
4. Courier font indicates text typed into the interface. Specific keys appear in brackets. Example: <enter>

1.5.2. Glossary of MiniMapper Terms

AJB file	The MiniMapper Job file. MiniMapper creates this file when the save option is selected.
Aspirate:	The process of removing reagent from a vessel through suction. Aspiration is effected through the cannula.
Bulk Solvent:	A solvent located in one of the six online bottles.
Cannula:	The tube used to aspirate and dispense liquids. The cannula is located on the robotic arm. Many types of cannulas may be used, including cannulas for piercing septa.
Carrier:	A device that holds small racks in order to place them on the deck.
Chemistry:	Used in this document to refer to the chemical processes executed and supported by MiniMapper.
Deck:	The physical workspace of the workstation where racks and carriers are placed. The deck features locator pins for securing the racks and carriers. The term deck also refers to graphical representation of the physical deck in the software.
Dispense:	The process of putting reagent into a vessel through the cannula using pressure. Typically, some amount of liquid is first aspirated from one vessel or a bottle solvent and then dispensed into one or more other vessels.
Job:	A complete set of instructions for the MiniMapper procedure including solvents, layout, and a process. Jobs can be saved or run once and discarded. Jobs can also be converted to templates for use in the MiniMapper Wizard software.

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Layout:	The configuration of racks and carriers on the MiniMapper deck, both physically and as specified in the software.
Mapper:	Software utility used to create a graphical representation of the job called a Mapping.
Mapping:	A graphical representation of the job. Mappings are created using the Mapper software.
MMA file:	The Mapper Process Specification file. The Mapper creates this file and then the primary software uses it to add the appropriate steps to the process. The file may be reopened and edited using the mapper utility.
Process:	A series of steps making up a procedure performed by MiniMapper.
Rack:	A device that contains vessels. Racks come in many colors, sizes, orientation, and capacities including MiniBlock and XT.
RVL file:	The Reagent Volume Level file specifies the initial volumes of all vessels in the process. The Mapper or an external program such as Microsoft Excel or Notepad can create this file.
Sample Loop:	The tubing that carries online solvents from the syringe to the cannula.
System Solvent:	Any solvent that has been defined in the Liquid Manager utility.
Step:	Refers to any of a set of pre-defined actions performed by MiniMapper. Processes: are made up of steps.

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2. Information Server

2.1. Introduction

The **Information Server** controls calibration of all rack, carrier, and cannula settings. The **Information Server** must be running for the MiniMapper system to function properly. It can be used to synchronize multiple workstations and manage available racks and carriers. A file must be obtained from Mettler-Toledo when new racks or carriers are added to the system. Once the new rack or carrier has been added, it appears in the **Available Racks** list in the MiniMapper software.

Warning: Editing the calibration information without Mettler-Toledo's assistance may result in errors and crashes on the deck. Mettler-Toledo recommends contacting support before using the **Information Server.**

The diagram below illustrates the **Information Server** window.

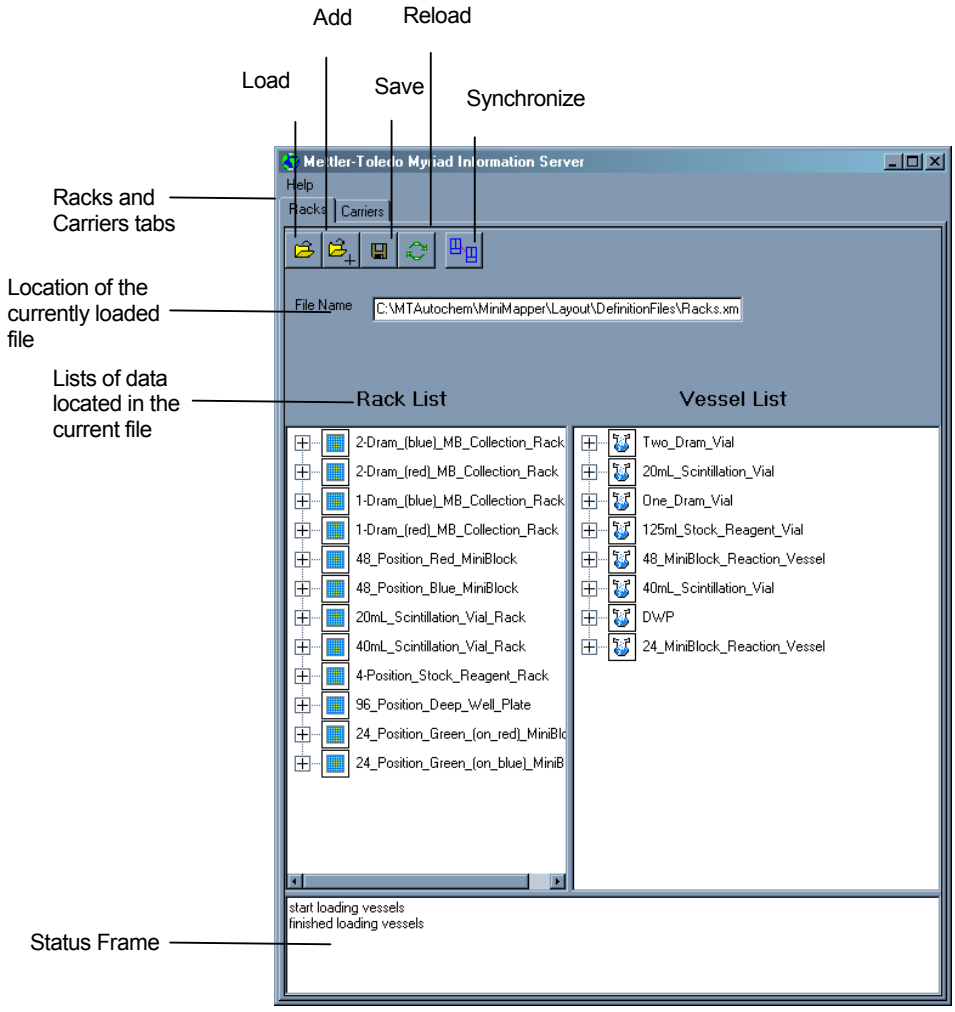


Figure 2-1: Information Server

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2.2. Adding Racks and Carriers

Follow the instructions below to add new racks or carriers to the **Information Server**.

1. Save the rack or carrier XML file to the MiniMapper computer.
2. Double click the **Information Server** icon or click the icon and select **Show** from the menu that displays.
   The ***Information Server*** window displays.
3. Click the **Load** button.
   The ***Open*** dialog box displays.
4. Navigate to the new XML file location and click the **Open** button.
5. Click the **Add** button.
   The ***Open*** dialog box displays.
6. Navigate to C:\MTAutochem\MiniMapper\Layout\DefinitionFiles\Racks.xml to add racks or C:\MTAutochem\MiniMapper\Layout\DefinitionFiles\Carriers.xml to add carriers and click the **Open** button.
7. Click the **Save** button.

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3. Preparing the Deck

3.1. Loading Racks and Carriers

Racks and carriers are placed on the deck of the instrument using the pins as locators. Load racks on the deck using the following guidelines.

- Standard racks and carriers must be placed on pins #2 through #8 with the notch and label toward the user.
- The 4-Position Stock Reagent Rack may only be placed on pin #1 with the notch and label toward the user.
- The 4-Position carrier must be placed no further right than pin #6. The front edge of this carrier does not have a notch. Instead, the front edge is beveled in and marked on the under side.
- Each carrier has a unique configuration. Follow the carrier's specifications when placing racks on it.

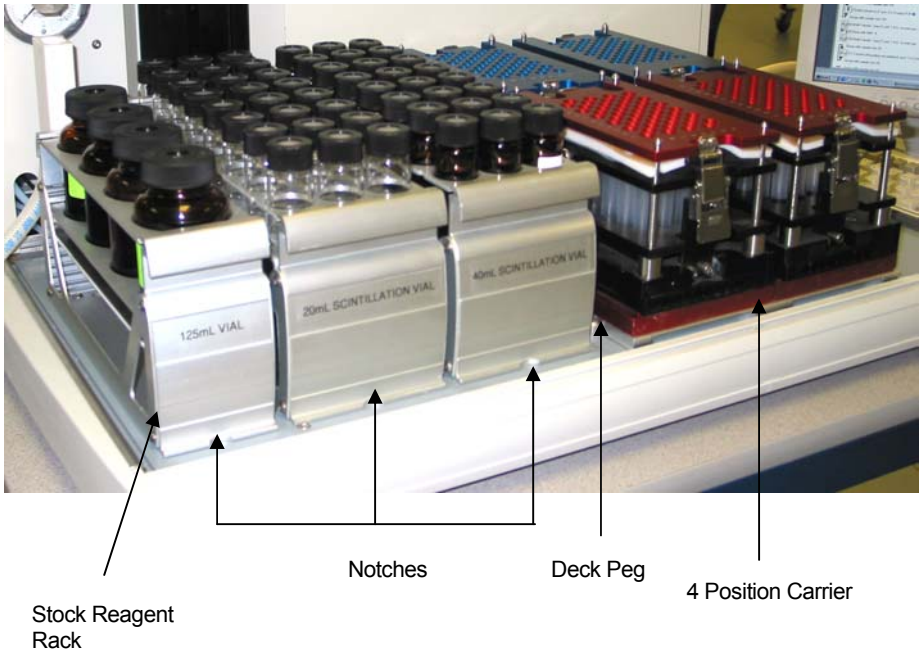


Figure 3-1: Loaded Deck

Note: Please refer to the **MiniBlock Operations Manual** and **XT**. **Operations Manual** for more information on using MiniBlock and XT with the MiniMapper workstation.

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3.2. Loading Reagents

Place the appropriate vials of reagents in the racks using the following guidelines.

- Cap with septum may be used.
- Use caution when filling reagents so as not to exceed minimum and maximum volumes. These volumes are critical for proper operation of the cannula and vent system.
- Use caution when handling reagents that are sensitive to atmospheric exposure.
- Carefully document where reagents and reactants have been placed. This information will be needed when writing a job.
- If using the Mapping software, a file may be generated in text, tab delimited format that contains reagent and reactant information. See 4.4.2.2 Specifying Initial Volumes.

Note: Understanding of MiniBlock and XT materials is important when selecting MiniBlock and XT components for a given chemistry. Please refer to the MiniBlock Operations Manual and XT Operations Manual for more information.

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4. Writing a Job

A MiniMapper job is made up of a Layout, a Map, and a Process.

- The Layout specifies the racks and their location on the deck.
- The Mapping specifies the source and destination containers for liquids used in the job.
- The Process lists the Steps that MiniMapper will perform.

The table below summarizes how to create a new job.

Start the MiniMapper software (See Section 1.3.4 **Error! Reference source not found.**) 
Load the Deck (See Section3 Preparing the Deck) 
Specify the Layout (See Section 4.1 Creating a Layout) 
Specify the Solvents for the Job (See Section 4.2 Specifying Solvents for the Job) 
Adjust Liquid Handling Parameters (See Section 4.3 Managing Liquid Handling Parameters) 
Create a Mapping (See Section 4.4 Mapper) 
Create the Process (See Section 4.5 The Process)

Table 4-1: Writing a Job

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4.1. Creating a Layout

The Layout describes where the racks and carriers are located on the deck. The **Layout** allows selection and positioning of the racks. Racks may be added, deleted, and rearranged.

The **Rack Type** frame of the **Layout** window consists of two tabs:

My Racks: Displays your available racks.

Advanced: Displays all racks and carriers that can be used on MiniMapper.

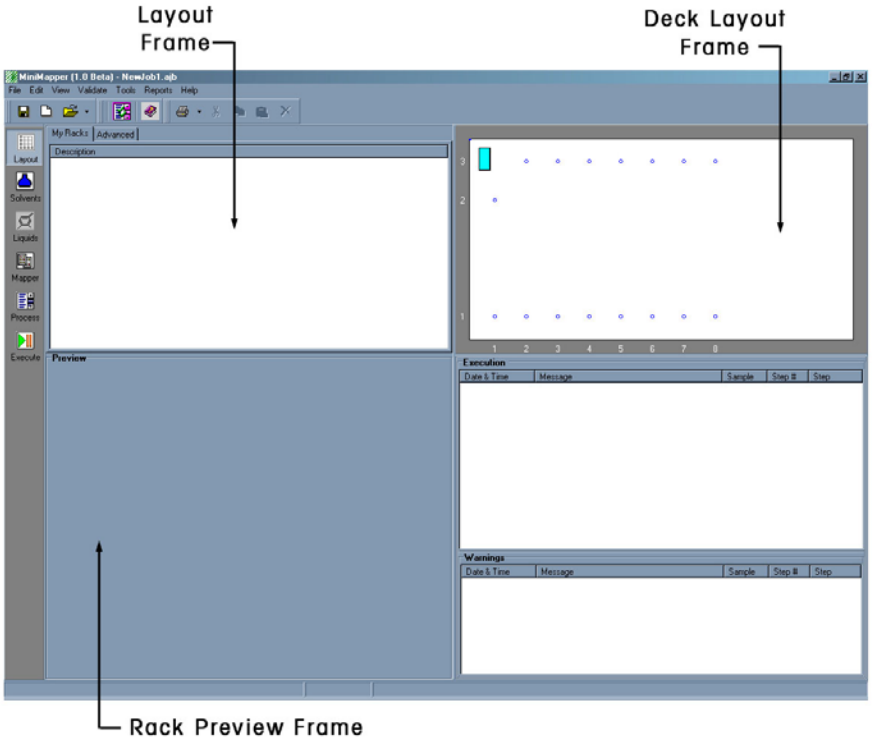


Figure 4-1: Layout Window

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4.1.1. Using the My Racks Tab

The **My Racks** tab displays in the **Layout** frame when the **Layout** window opens. The tab consists of the **Description** list box.

The **Description** list box contains the names of your commonly used racks. Clicking on a rack in this list displays a diagram of it in the **Preview** frame, at the bottom left of the window. Right-clicking on a rack in **My Racks** displays the following options:

- Add to deck
- Rename
- Delete
- Properties

4.1.2. Using the Advanced Tab

The **Advanced** tab displays in the **Layout** frame when clicked in the **Layout** window. The tab consists of the following two tabs.

Racks: Displays the full range of racks that can be used on MiniMapper. Clicking the rack name in this list displays a diagram of it in the **Preview** frame, at the bottom left of the window. Double clicking the rack name adds it to the deck and displays it in the **Deck Preview** frame at the top right.

Carriers: Displays the full range of carriers or locators that can be used on MiniMapper. Clicking the carrier name in this list displays a diagram of it in the **Preview** frame, at the bottom left of the window. Double clicking the carrier name adds it to the deck and displays it in the **Deck Preview** frame at the top right.

Right-clicking on a rack or carrier in the **Description** frame displays the following option:

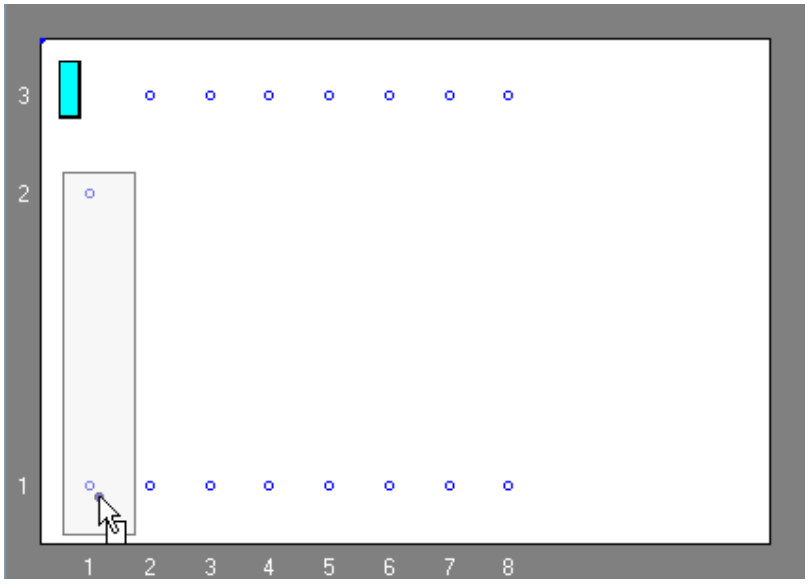
- Add to Deck

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4.1.3. Adding a New Rack to the Layout

The Layout tells MiniMapper which racks are present on the deck and their locations for a job. Follow the instructions below to add a new rack to the layout.

1. Select **Layout** from the **View** menu or click the **Layout** button .
2. The **Layout** window displays.
3. Select the desired rack type from the list in the **My Racks** tab.
4. The rack displays in the **Rack Type Preview** frame, at the bottom left of the window.
5. Add the selected rack to the deck:
   - Right-click on the selected rack type and select **Add to deck** from the menu that displays,
   - **OR** Double-click on the rack,
   - **OR** drag the selected rack onto the **Deck Layout** frame and place it on one of the deck layout locating pins as shown below.



Note: MiniMapper indicates invalid rack placement with a **No Entry** sign.

*The rack displays in the **Deck Layout** frame.*

4.1.4. Adding a Rack / Carrier to My Racks

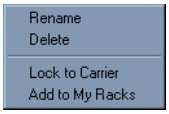
Frequently used racks or carriers listed under the **Racks** and **Carriers** tabs of the **Advanced** tab may be added to the **My Racks** list for convenient access. Some racks must first be locked to a carrier before they may be added to the **My Racks** list.

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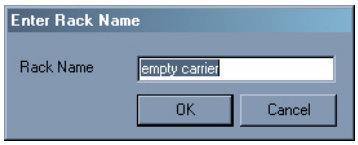
4.1.4.1. Adding a Rack to My Racks

Follow the instructions below to add a rack to **My Racks**.

1. Add the rack to the **Layout** as described in 4.1.3 Adding a New Rack to the Layout.
2. Right click on the rack in the **Deck Preview** frame.
   A drop down menu displays:



3. Select **Add to My Racks**
   *The **Enter Rack Name** dialog box displays:*



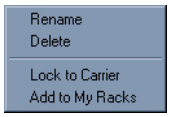
4. Type a name for the rack in the **Rack Name** text field.
5. Click the **OK** button.
   *The rack is added to the **My Racks** list.*

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4.1.4.2. Adding a Carrier to My Racks

Follow the instructions below to add a carrier to **My Racks**.

1. Add the carrier to the **Layout** in the manner described for racks in 4.1.4.1 Adding a Rack to My Racks.
2. Add a rack to the carrier, in the manner a rack is added to the **Layout**, if desired.
3. Right click on the carrier in the **Deck Preview** frame.
   A drop down menu displays.



4. Select **Lock to Carrier** if a rack has been added to the carrier.
5. Right click on the carrier in the **Deck Preview** frame and select **Add to My Racks** from the drop down menu.
   *The **Enter Rack Name** dialog box displays:*



6. Type a name for the carrier in the **Rack Name** text field.
7. Click the **OK** button.
   *The carrier is added to the **My Racks** list.*

4.1.5. Renaming a Rack

Racks can be renamed for either the current job or the **My Racks** list.

Follow the instructions below to rename a rack for the current job.

1. Right-click on the rack in the **Deck Preview** frame to change the name for the job

   OR

   Right-click on the rack name in the **My Racks** tab to change the name in **My Racks.**
   A drop down menu displays.

2. Select **Rename**.
   *The **Object Name** dialog box displays.*
3. In the **Name** text box, type a new name for the rack.
4. Click the **OK** button to close the dialog box.

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4.1.6. Moving a Rack in the Layout

Racks can be rearranged in the layout if necessary.

Follow the instructions below to move a rack on the Layout.

1. Click the rack you want to move in the **Deck Preview** frame.
2. Drag the rack to its new position.

> **Note:** The drag cursor snaps to the locator pin positions on the deck layout.

4.1.7. Removing a Rack from the Layout

Follow the instructions below to remove a rack from the Layout.

1. In the **Deck Preview** frame, right-click on the rack.
   A drop down menu displays.
2. Select **Delete**.
   MiniMapper removes the rack from the deck.

4.1.8. Viewing Rack Layout Properties

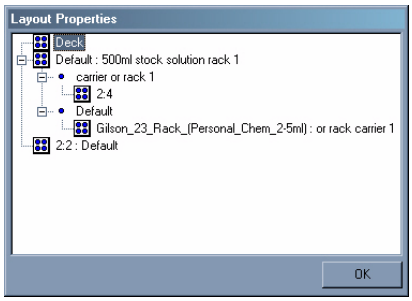
The **Layout Properties** dialog box lists the racks and carriers currently located on the deck.

Follow the instructions below to view the **Layout Properties**.

1. Right click on the **Deck Preview** frame.
   A drop down menu displays:



2. Select **Properties** from the drop down menu.
   *The **Layout Properties** dialog box displays:*



3. Click the **OK** button when finished viewing the **Layout Properties**.

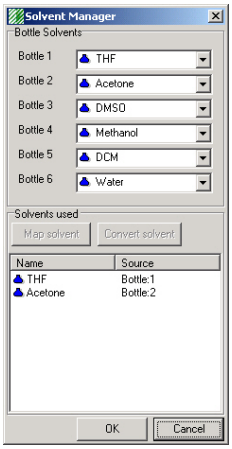
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4.2. Specifying Solvents for the Job

The MiniMapper accommodates up to six online bottle solvents. These solvents can be used for washing the cannula or dispensing into vials on the deck. When using online bottle solvents always prime the lines to ensure that no air is present.

MiniMapper must be told which solvents are located in the online solvent bottles. Follow the instructions below to specify the bottle solvents.

1. Click the **Locate Solvents** button .
2. The **Solvent Manager** dialog box displays:



3. Select a solvent for each of the **Bottle 1** through **Bottle 6** drop down lists to specify which solvent each bottle currently contains.
4. Click the **OK** button.

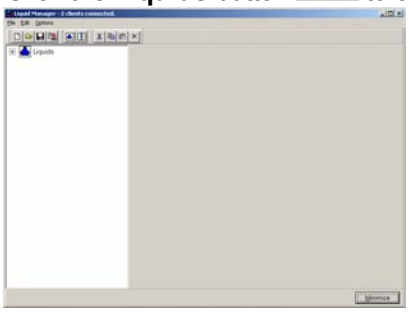
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4.3. Managing Liquid Handling Parameters

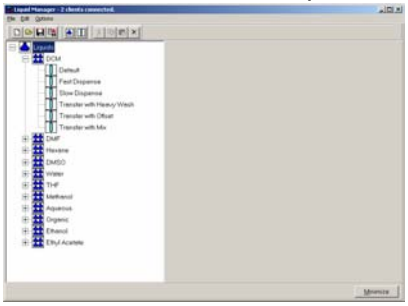
The **Liquid Manager** keeps track of all liquids used with the MiniMapper workstation along with information about the liquids. Each liquid may have several pipette parameters defined for handling the liquid in different scenarios. A default set of liquids and pipette parameters, called a liquid database, exists and other liquids and pipette parameters can be added, modified, and deleted from this database. New databases may also be created. The following sections describe how to manage liquids using the **Liquid Manager**.

4.3.1. Viewing the Liquid Manager

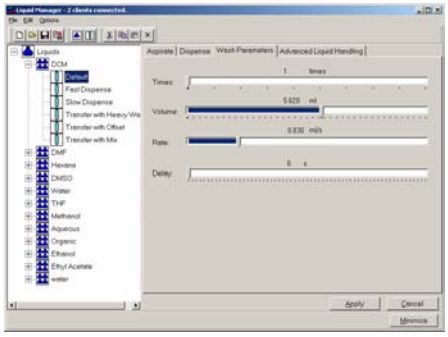
1. Click the **Liquids** button  to open the **Liquid Manager**.



2. Click the  next to the liquids icon to show all defined liquids.



3. Click the  next to the desired liquid to show all available pipette parameter sets.
4. Click on a pipette parameter name to display the parameters. See Table 4-2: Pipette Parameters for more information.



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4.3.2. Liquid Handling Parameter Descriptions

Liquid Handling Parameters (Pipette Parameters) are necessary to ensure the integrity of samples and accuracy of measurements. Each liquid behaves differently in the cannula and sample line depending on its unique properties, affecting accuracy. Most parameters are controlled by manipulating the speed in which the syringe pump moves and the delay in pump movement at critical intervals. The delay setting pauses the syringe movement to allow the system to equilibrate.

The table below describes the Liquid Handling Parameters.

Tab	Fields	Instructions
Aspirate	Rate	Adjust the slider to the desired aspiration rate in milliliters per second.
	Delay	Adjust the slider to the delay time in seconds.
	Aspirate offset	Type in a **negative** offset value in millimeters. **Warning:** Cannula is calibrated to the bottom of the vessel and a positive value will cause the cannula to crash into the bottom of the vessel. A negative offset greater than the height of the vessel will result in the cannula stopping above the vessel.
	Mix Parameters	When the Mix before Aspirate check box is selected the remaining mix parameters are available and can be set using the sliders. They are: Times, Volume, and Rate.
Dispense	Rate	Adjust the slider to the desired dispense rate in milliliters per second.
	Delay	Adjust the slider to the delay time in seconds.
	Aspirate offset	Type in a positive offset value in millimeters. **Warning:** Cannula is calibrated toward the top of the vessel. A positive value greater than the height of the vessel will cause the cannula to crash into the bottom of the vessel. A negative offset will result in the cannula stopping above the vessel.
	Mix Parameters	When the Mix before Aspirate check box is selected the remaining mix parameters are available and can be set using the sliders. They are: Times, Volume, and Rate.

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Wash Parameters	Times	Adjust the slider to the desired number of times to wash.
	Volume	Adjust the slider to the desired wash volume in milliliters.
	Rate	Adjust the slider to the desired wash rate in milliliters per second.
	Delay	Adjust the slider to the delay time in seconds.
Advanced Liquid Handling	Trail Air Gap Volume	These parameters allow minimization of cross-contamination and increased measurement accuracy. The illustration supplied shows where each field affects the pipette. Type in values for each field in milliliters.
	Air Gap Volume	
	Over Draw Volume	
	No Drip Volume	

Table 4-2: Pipette Parameters

4.3.2.1. Liquid Property Considerations

The MiniMapper workstation handles a wide variety of liquids using three types of liquid transfers:

- Add Solvent: Dispensing online solvents or liquids into vessels on the deck.
- Transfer: Moving Liquids from a single source vessel to a single destination vessel.
- Mapping: Moving liquids from a single source vessel to multiple destination vessels.

Each type of liquid and each operation requires unique liquid handling parameter settings. Liquid properties such as viscosity, surface tension, density, and volatility all affect how the liquid behaves inside the cannula and sample loop, and thus how the parameters should be set. Follow these recommendations to help select appropriate parameters:

Use slow aspirating and dispensing speeds to avoid introducing air into the system.

Faster speeds may be used for washing, when accuracy is not critical, but introduction of air is still a risk.

Highly viscous liquids will continue to move in the system after the syringe has stopped, requiring longer delay times.

Liquids which have high density, low viscosity, or are volatile may run and drip requiring larger overdraws.

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4.3.2.2. Sample Integrity Considerations

The system must be fluid filled in order to ensure accuracy and proper function. This means that system solvent will always be present in the sample loop, and could mingle with aspirated samples. This can be prevented by using air gaps and overdraw as shown in Figure 4-2: Advanced Liquid Handling Parameters. An overdraw creates a barrier for the intermingling of the liquids if the air gaps break down. Drawing a no drip volume allows heavy, low viscosity or volatile liquids to drip without affecting the sample volume.

When aspirating and dispensing MiniMapper:

1. Moves to the source vessel and lowers the cannula.
2. Open vents and purges with Inert gas (if the inert option was selected).
3. Draws the trail air gap.
4. Draws the air gap.
5. Lowers to the aspirate position, ± offset, inside the vessel. Some bubbling will occur due to back pressure. The bubbling minimizes cross contamination.
6. Draws the overdraw volume.
7. Draws the volume.
8. Raises the cannula.
9. Draws the no drip volume.
10. Turns off gas and opens vent to release back pressure.
11. Moves to the destination vessel.
12. Lowers to the dispense position, ± offset, inside the vessel.
13. Open vents and purges with Inert gas (if the inert option was selected).
12. Dispenses the no drip volume.
13. Dispenses the volume
14. Moves to wash station, dispenses any remaining volume and air, and washes the cannula (if the wash option was selected).

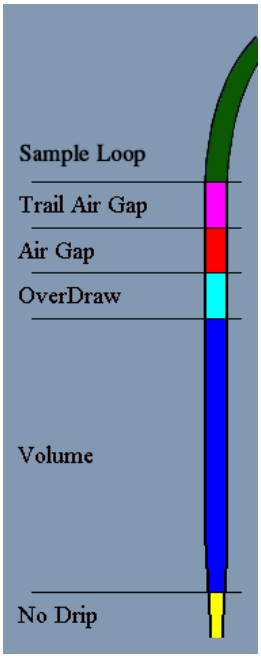


Figure 4-2: Advanced Liquid Handling Parameters

Follow these recommendations to help select appropriate parameters:

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When using a valuable liquid, use large air gaps and no overdraw. Accuracy will be lower, but the liquid will not be wasted.

Total air gap volumes should be 0.01 ml to 0.05 ml

No drip volumes should be 0.01 ml to 0.05 ml

When using the standard three channel cannula, a no drip volume is only needed for liquids that are highly moisture and air sensitive. Most Dripping is caused by the surface tension of the liquid and the outside surface of the cannula. Longer delays, to allow the drip to form, and wiping off the cannula should be effective in most situations.

4.3.3. Liquid Manager Toolbar

The following table describes the tools available in the **Liquid Manager** window.

	Open Liquid Database	Opens an already existing database.
	Save Liquid Database	Saves changes to the current database.
	Save As Liquid Database	Saves a new database.
	Create New Liquid	Creates a new database.
	Create New Pipette Parameters	Creates new liquid handling parameters.
	Cut	Removes selected Liquid or Parameters and stores for pasting in a different area
	Copy	Copies selected Liquid or Parameters.
	Paste	Pastes most recently cut or copied Liquid or Parameters.
	Delete	Removes selected Liquid or Parameters.

Table 4-3: Liquid Manager Tools

4.3.4. Editing Pipette Parameters

The pipette parameters may be modified while viewing them as described in the previous section. Follow the instructions below to modify the parameters

1. Click on a tab at the top of the window to modify the related parameters. See Table 4-2: Pipette Parameters for more information.
2. When parameter changes are complete, click the **Apply** button and then the **Save** button to save changes, or click the **Cancel** button to return to the original settings.

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4.3.5. Adding Liquids

Follow the instructions below to add a new liquid.

1. Click the **Create New Liquid**  button.

*A new icon titled New Liquid populates the list with three default sets of parameters: **Mapping Prime**, **Mapping Add Solvent**, and **Mapping Transfer**.*

> **Note:** The **Mapping Prime**, **Mapping Add Solvent**, and **Mapping Transfer** parameters are used by default in the **Mapper** when each type of operation is specified. See Section 4.4.1 Creating a Mapping for more information on maps. These parameter sets are reserved for use with the Mapper.

2. Type a name for the new liquid in the **Liquid Name** field on the **Properties** frame.
3. Click on each set of pipette parameters and adjust the parameters as needed. See Table 4-2: Pipette Parameters for more information.
4. Add new pipette parameters as needed.

4.3.6. Adding Pipette Parameters

Follow the instructions below to add new pipette parameters.

1. Click the **Create New pipette parameters**  button.

   A new icon titled Default populates the list.

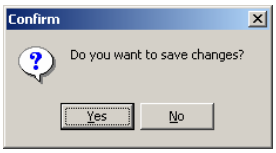
2. Right click **Default** and select **Rename** from the drop down menu that displays to rename the new parameters.
3. Type a name for the new parameters and press **<Enter>**.
4. Click on the pipette parameter name to display and adjust the parameters as needed. See Table 4-2: Pipette Parameters for more information.

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4.3.7. Creating a New Liquid Database

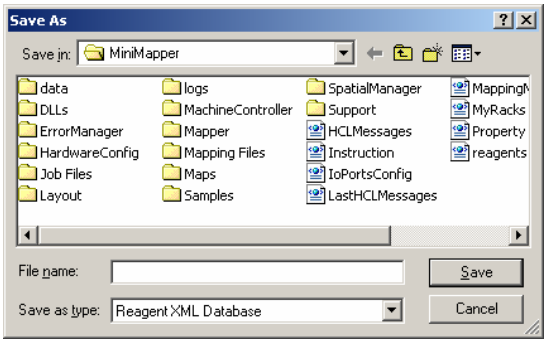
MiniMapper allows creation of several sets of liquids and pipette parameters, called Liquid Databases. Only one database may be active at one time. Follow the instructions below to create a new database.

1. Click the **New Liquid Database** button  to close the current database and create a new database.
   A confirmation dialog box displays:



2. Click the **Yes** button to save changes made to the currently displayed database or the **No** button to continue without saving changes.
   The new, empty database displays.
3. Add liquids and pipette parameters as described in the previous sections.
4. Click the  button to save the new liquid database.

   *The **Save as** dialog box displays:*



5. Select the MiniMapper folder.
6. Type a name in the **File name** field.
7. Click the **Save** button.

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4.4. Mapper

The Mapper allows graphical development of processes. The Mapper:

- Guides the creation of reagent aspiration/dispensing between and among vessels in racks
- Saves, edits, exports, and imports reagent mappings
- Supports any rack configuration, including Mettler Toledo MiniBlock types
- Imports and exports initial reagent volumes and names
- Provides the operator with a numeric spreadsheet-like display and a graphical display
- Allows for customization of the presentation of Mapper components and working environment

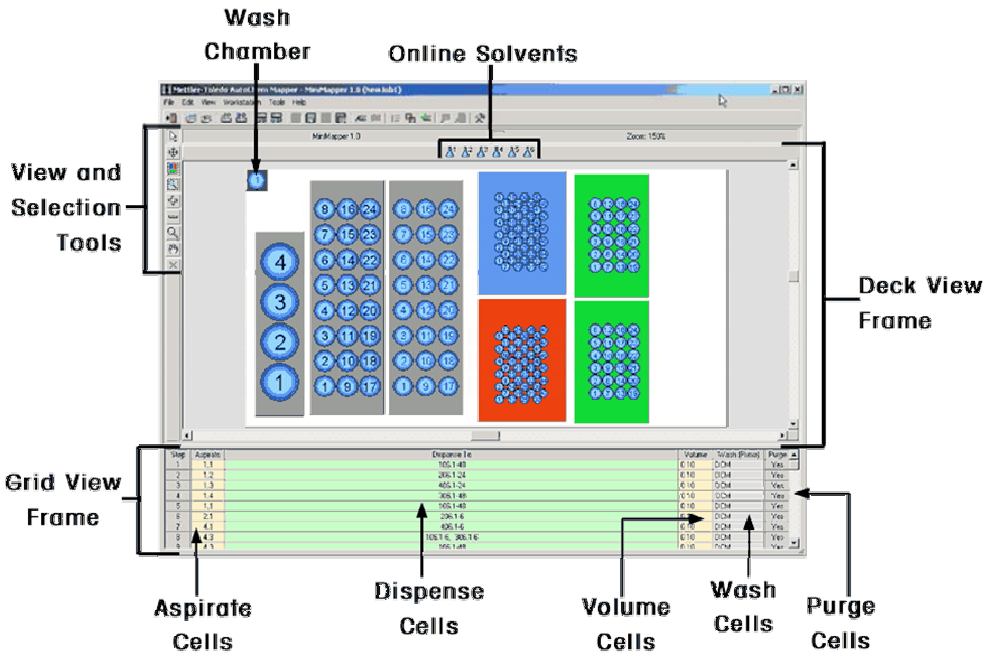


Figure 4-3: Mapper Window

The following sub-sections contain information on getting started using the Mapper software with the MiniMapper workstation. For more information on the Mapper menus and view tools see Appendix B: Mapper Controls.

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4.4.1. Creating a Mapping

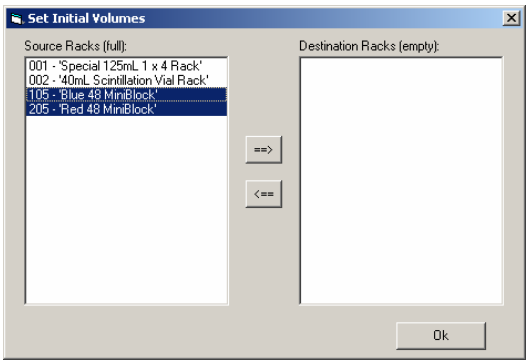
Creating a Mapping is a visual way to add steps to the process. This method can create three types of steps:

- Prime: Map an online solvent to the wash chamber. Uses **Mapping Prime** Pipette Parameters.
- Add Solvent: Map an online solvent to vials on the deck. Uses **Mapping Add Solvent** Pipette Parameters.
- Multiple Transfer: Map the contents of one vial on the deck to many other vials. Uses **Mapping Transfer** Pipette Parameters.

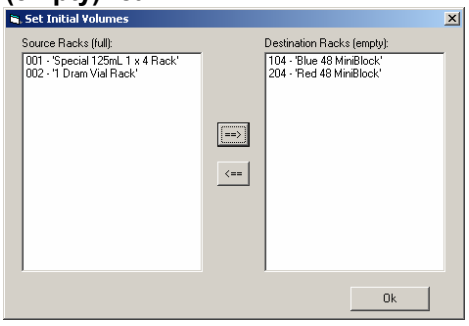
Note: See 4.3.5 Adding Liquids for more information on default **Pipette Parameters.**

Follow the instructions below to map the solvents in the controller software.

1. Click the **Mapper** button  to select source and destination vials.
   The Mapper window and the Set Initial Volumes dialog box display:



2. Click on one or more racks in the **Source Racks (full)** list to select the destination rack(s).
3. Click the **Right Arrow** button  to move the highlighted rack(s) to the **Destination Racks (empty)** list.

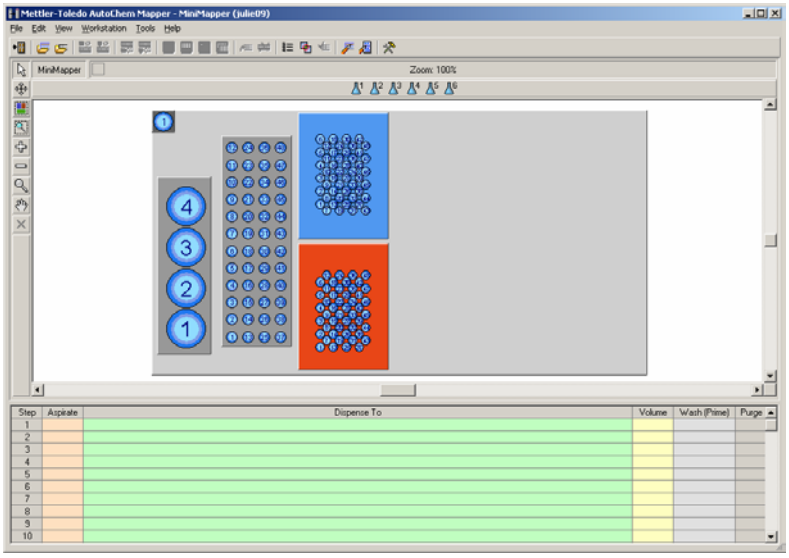


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Note: The mapping software also performs default Volume Tracking. This step sets up the default volumes, full for source vessels and empty for destination vessels. See 4.4.2.2 Specifying Initial Volumes for information on using an input file to specify exact volumes.

4. Click **OK** to continue.

   *The **Set Initial Volumes** dialog box closes. The **Mapper** window remains open:*



5. Click in the **Aspirate/Step 1** cell.
6. Click on the desired source vial or bottle .

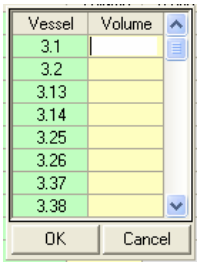
   *The vial turns yellow, the information populates the cell, and the cursor moves to the **Destination** cell of the table.*

7. Click a single vial or click and drag the pointer around multiple vials to select the destination vial(s).
   The vial(s) turn white and the information populates the cell.
8. Click in the **Volume** cell of the table.
9. Type a volume to dispense that volume to all vials selected
   OR
   Click the **Arrow** 

   button to enter a different volume for each vial selected.

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Example:



Note: If the volume entered is not appropriate due to minimum and/or maximum vial capacity, a warning will display. Review the warning carefully and modify the step accordingly. Move the cursor to the **Volume** cell, click and edit as described above.

Note: For more information about changing settings in the mapping program, not related to writing a job, refer to Appendix A.

10. Click in the **Wash** cell of the table and select a solvent to prime with from the drop down list.
11. Click in the **Purge** cell to select purging.
12. Repeat steps 5 – 11 until all liquid transfers have been defined.
13. Select **Save Mapping As…** from the **File** menu.
    *The **Save** dialog box displays.*

Note: The **Save Dialog** box defaults to the “Maps” folder in order to save all mappings in a central location.

14. Type a file name in the **File Name** field.
15. Click the **OK** button.
16. Close the **Mapping** window.

*The **Main** window and the **Open** dialog box display.*

17. Click the Mapping file name.
18. Click the **Open** button.
    *The **Process** displays with the appropriate steps added to the process.*

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4.4.2. Volume Tracking

4.4.2.1. Vessel History

The volume-tracking feature supplies information about the volume of liquid available and/or removed from a vessel. Right click on a vial to display the **Vessel History** pop-up window. The window displays general information on the type of vessel, its location, capacity, current volume, advised maximum and minimum volumes, and a list of all seps involving the vessel.

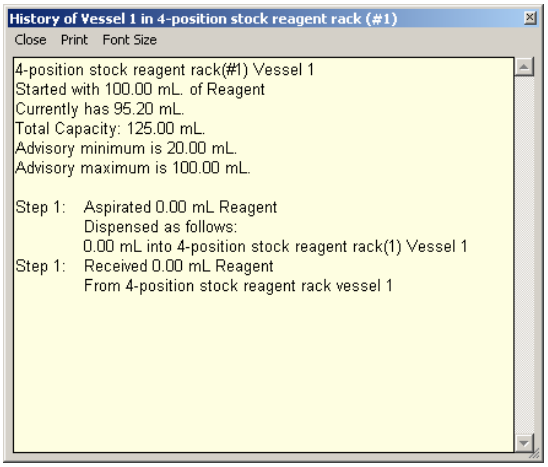


Figure 4-4: Vessel History Pop-up

4.4.2.2. Specifying Initial Volumes

MiniMapper uses default volumes of full for source vials and empty for destination vials. Exact volumes can be defined by importing a Reagent Volume Levels File.

Reagent Volume Level File (RVL)

The Reagent Volume Level file may be created using a text editor such as Windows Notepad, a spreadsheet such as Microsoft Excel, or the Mapper. The file is comma delimited and has the file extension .rvl. The file may contain comments, indicated by a hash mark (#) at the beginning of each line. Example:

```
#  Mettler-Toledo AutoChem Mapper Reagent Volume File
#  Created by Mapper 1.0.24 on 10/07/01 at 11:22:23
#  Deck Configuration was "Mettler-Toledo AutoChem USP Deck"
#  Racks: 23="Red Miniblock", 27="Blue MiniBlock", 29="Scint Rack A", 33="Scint Rack B"
#  Vessels missing from a rack will not be present in this file.
#  Format:  Rack,Vessel,Capacity,MinVol,MaxVol,StartVol,Reagent
#=======================================================
23,1,20.00000,0.00000,20.00000,8.50000,HCl
23,2,20.00000,0.00000,20.00000,8.50000,NaCl
23,3,20.00000,0.00000,20.00000,8.50000,NaCl
23,20,20.00000,0.00000,20.00000,10.00000,HCl
23,21,20.00000,0.00000,20.00000,10.00000,HCl
...
```


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The Format comment line describes the exact format expected by the Mapper when it reads and uses the RVL.

- Rack: the internal rack index number from the workstation. In the example above, we show data for rack #23.
- Vessel: the numerical vessel number within that rack.
- Capacity: the rated capacity of the vessel. This number must be the same for all vessels in the same rack.
- MinVol and MaxVol: the minimum and maximum advisory volumes above or below which a warning is issued by Mapper.
- StartVol: the initial volume of the reagent in the vessel. If empty, this value is specified as zero.
- Reagent: the name of the reagent in the vessel (optional).

To create the file in Excel, type each value in its own cell, separating vessels by rows. Save the spreadsheet in “CSV” (comma delimited) format. Then, rename the file with the extension .rvl.

To create the file in a simple text editor, type out the values as shown in the example and save with the .rvl extension.

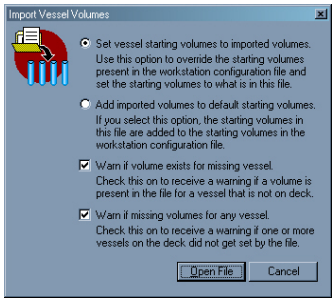
The Mapper generates the file when the Export Volumes option is selected. The values are based on the current values used in the mapping.

Import Reagent Volumes

Follow the instructions below to import exact volumes.

1. Click the **Import Volumes**  button or select **Import Volumes** from the **File** menu.

*The **Import Vessel Volumes** dialog box displays.*



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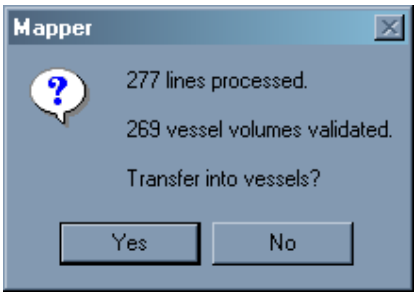
2. Select the desired parameters and click the **Open File** button.

Parameter	Description
Set initial vessel volumes to imported volumes.	Replaces the default volume values of full and empty. Selected by default.
Add imported volumes to default values.	Adds the volumes in the file to the default values of full and empty.
Warn if volume exists for missing vessel.	Produces a warning dialog box if extra values exist in the file. Selected by default.
Warn if missing volumes for any vessel.	Produces a warning dialog box if any values are missing. Selected by default.

*The **Open Reagent File** window opens.*

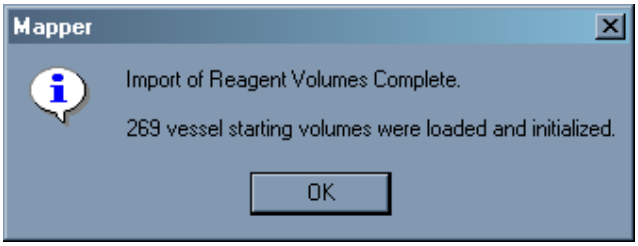
3. Navigate to the file and click the **Open** button.

A confirmation dialog box displays a summary of the imported data.



4. Click the **Yes** button to proceed.

A confirmation dialog box displays.



15. Click the **OK** button.

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4.5. The Process

The Process is made up of steps. Steps can be added to a process using the mapping software or using the **Process** window. The steps can then be edited and rearranged as necessary. The following sections contain more information on creating a process and the steps that make up a process.

The step buttons are displayed at the top of the Process and the Description frame lists the Process steps, the involved sample(s), and the status.

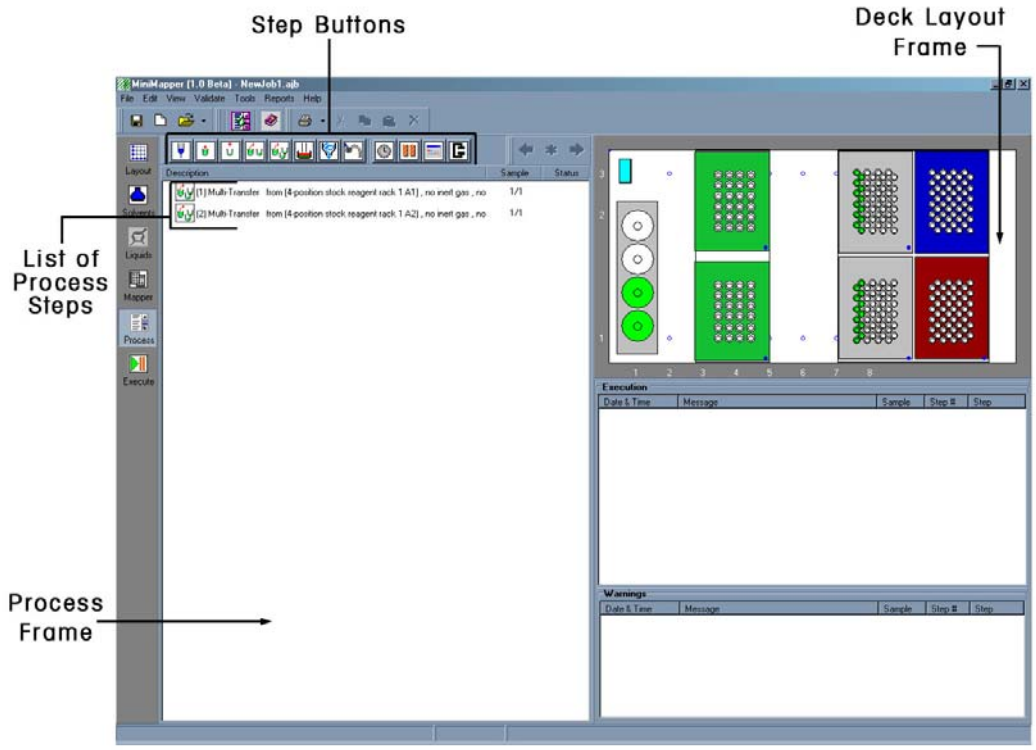


Figure 4-5: Process Window

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4.5.1. Steps

The following table provides an overview of each of the available steps.

Icon	Name	Description
	Add Solvent	Adds solvent from on e of the six bottle solvents.
	Aspirate	Draws a specified volume from a specified vessel.
	Dispense	Dispenses the aspirated liquid into a specified vessel.
	Transfer	Transfers the contents of one vial into another specified vial.
	Multi-Mapping Transfer	Transfers reagent/reactant from a single vial to multiple vials.
	Mix Vial Contents	Mixes the vial contents by aspirating and dispensing the sample back into the vial.
	Wash Cannula	Washes the inside of the cannula and settling chamber and the outside of the cannula with a specified bottle solvent. This can be useful for washing off any precipitate from the outside of the cannula.
	Prime	Changes the system solvent in the fluid lines and removes any gas in the fluid lines.
	Wait	Waits for a specified amount of time.
	Pause	Pauses the job and waits for user input.
	Launch Executable	Launches a specified executable file at this step in the process.
	Group	Groups steps, in order to specify the sample size of a Process. Each step is repeated a specified number of times using specified vials. Jobs may contain multiple Group Steps.

Table 4-4 Step Buttons

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4.5.2. Adding Steps to a Process

Follow the instructions below to add Steps to a Process.

1. Click the **Process** button  or select **Process** from the **View** menu.
   *The **Process** displays.*
2. Add steps to the **Process** by clicking and dragging Step buttons onto the **Process** window.
3. Double-click on each step to display the **Edit Parameters** dialog box and complete the step parameters.

4.5.3. Specifying Step Details

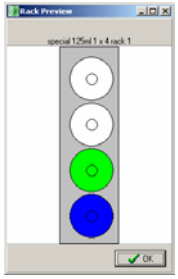
Each type of step requires input parameters. The following sections describe how to complete each step's parameters.

4.5.3.1. Selecting Vials

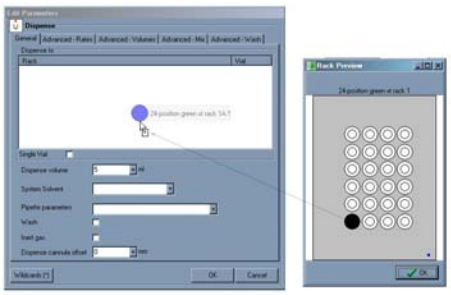
Many steps require the selection of one or more vials. Follow the instructions below to select vials.

1. Click on the desired destination or source rack in **Rack Preview** frame.

   *The **Rack Preview** pop-up window displays:*



2. Click and drag the destination vial into the **Dispense to** or **Aspirate from** list as shown below.



3. Click the **OK** button to close the **Rack Preview** pop-up window or click on a new rack to display it in the window.

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4.5.3.2. Add Solvent

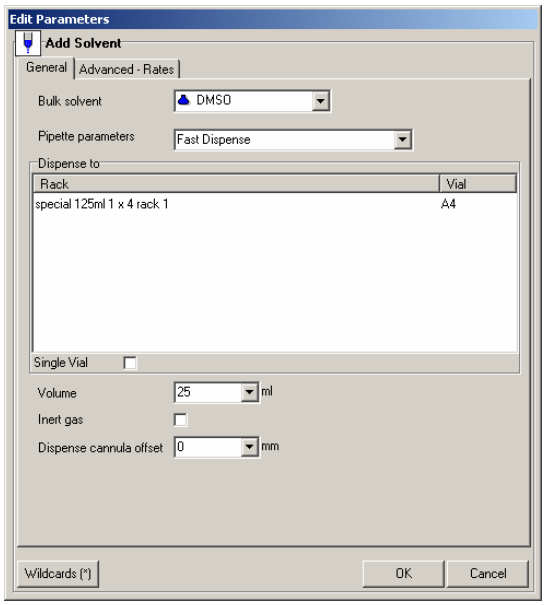


Figure 4-6: Add Solvent Edit Parameters Dialog Box

1. Select a bottle solvent from the **Bulk solvent** drop down list.
2. Select the **Pipette parameters** from the drop down list.
3. Select the **Dispense to Rack** as described in 4.5.3.1 Selecting Vials.
4. Check the **Single Vial** box to add solvent to only the first vial in a group.
5. Type in the **Volume**, or select a value from the drop down list.
6. Check the **Inert gas** box to add inert gas to the vial.
7. Type in the **Dispense cannula offset** or select a value from the drop down list.

Warning: Cannula is calibrated toward the top of the vessel. A positive value greater than the height of the vessel will cause the cannula to crash into the bottom of the vessel. A negative offset will result in the cannula stopping above the vessel.

8. Click the **Advanced– Rates** tab to edit syringe parameters and to set the Inert gas timer.
9. Click the **Wildcards*** button to specify different parameters for each sample.
10. Click the **OK** button to save the parameters or the **Cancel** button to exit without saving the parameters.

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4.5.3.3. Aspirate

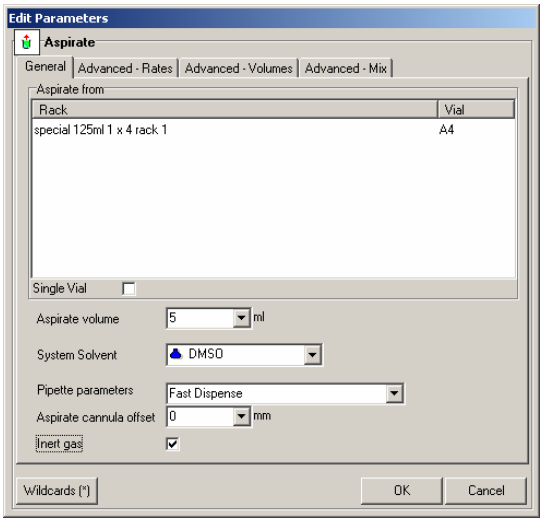


Figure 4-7: Aspirate Edit Parameters Dialog Box

Note: A Dispense step must follow an **Aspirate** step.

1. Select the **Aspirate from** vial as described in 4.5.3.1 Selecting Vials.
2. Check the **Single Vial** box to add solvent to only the first vial in a group.
3. Type in the **Aspirate volume** or select a value from the drop down list.
4. Select the **System Solvent** from the drop down list.
5. Select the **Pipette parameters** from the drop down list.
6. Select the **Aspirate cannula offset** from the drop down list.

Warning: Cannula is calibrated to the bottom of the vessel and a positive value will cause the cannula to crash into the bottom of the vessel. A negative offset greater than the height of the vessel will result in the cannula stopping above the vessel.

7. Click on the **Advanced** tabs to adjust aspiration rate, Inert gas timer, air gap, overdraw, no-drip volumes and mix parameters.
8. Click **Wildcards*** to specify different parameters for each sample.
9. Click **OK** to save the parameters.
10. Click **Cancel** to exit without saving the parameters.

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4.5.3.4. Dispense

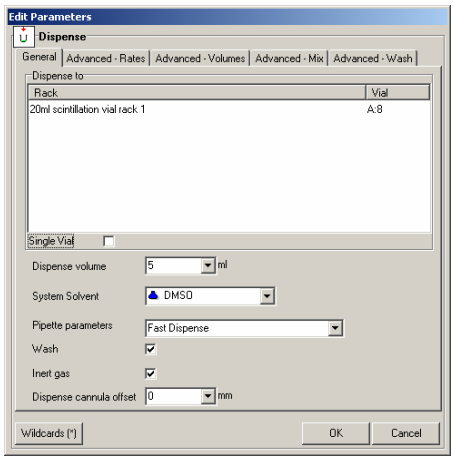


Figure 4-8: Dispense Edit Parameters Dialog Box

Note: An **Aspirate** step must precede a **Dispense** step.

1. Select the **Dispense to** vial as described in 4.5.3.1 Selecting Vials.
2. Check the **Single Vial** box to add solvent to only the first vial in a group.
3. Type in the **Dispense Volume** or select a value from the drop down list.
4. Select the **System Solvent** from the drop down list.
5. Select **Pipette parameters** from the drop down list.
6. Check the **Wash** box, if desired.If selected, the **Advanced Parameters** window displays. Edit parameters and select the **General** tab to continue.
7. Check the **Inert gas** box to add inert gas to the vial.
8. Type in the **Dispense cannula offset** or select a value from the drop down list.

   Warning: Cannula is calibrated toward the top of the vessel. A positive value greater than the height of the vessel will cause the cannula to crash into the bottom of the vessel. A negative offset will result in the cannula stopping above the vessel.
9. Click on the **Advanced** tabs to adjust aspiration rate, Inert gas timer, air gap, overdraw, no-drip volumes and mix parameters.
10. Click the **Wildcards*** button to specify different parameters for each sample.
11. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

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4.5.3.5. Transfer

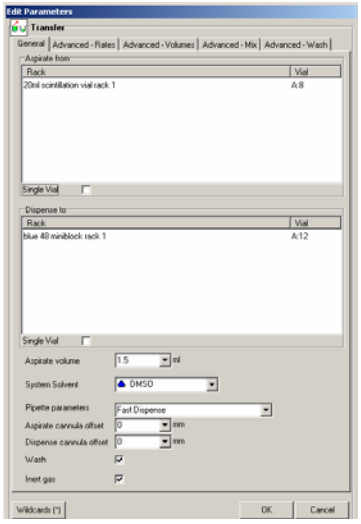


Figure 4-9: Transfer Edit Parameters Dialog Box

1. Select the **Aspirate from** vial as described in 4.5.3.1Selecting Vials.
2. Select the **Dispense to** vial as described in 4.5.3.1Selecting Vials.
3. Check the **Single Vial** box(es) to add solvent to only the first vial in a group.
4. Type in the **Aspirate Volume** or select a value from the drop down list.
5. Select the **System Solvent** from the drop down list.
6. Select **Pipette parameters** from the drop down list.
7. Type in the **Aspirate cannula offset** or select a value from the drop down list.

Warning: The cannula is calibrated aspirating and dispensing. Typing positive value in steps 7 or 8 may cause the cannula to crash into the bottom of the vessel. Typing a negative value may result in the cannula stopping above the vessel.

8. Type in the **Dispense cannula offset** or select a value from the drop down list.
9. Check the **Wash** box, if desired.
   If selected, the ***Advanced Parameters*** window displays. Edit parameters and select the ***General*** tab to continue.
10. Check the **Inert gas** box to add inert gas to the vial.
11. Click on the **Advanced** tabs to adjust aspiration rate, Inert gas timer, air gap, overdraw, no-drip volumes and mix parameters.
12. Click **Wildcards*** to specify different parameters for each sample.
13. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

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4.5.3.6. Multi-Mapping Transfer

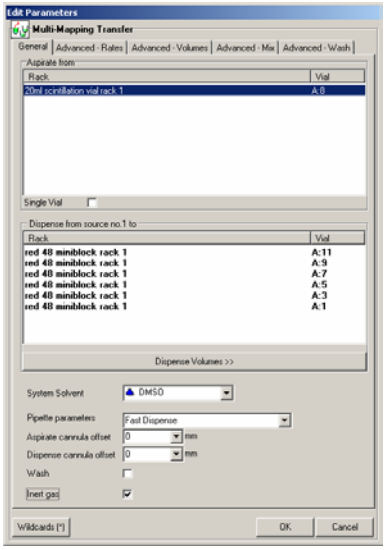
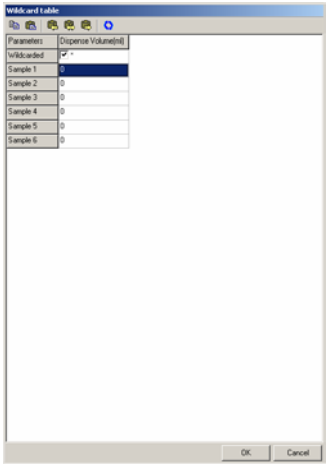


Figure 4-10: Multi-Mapping Transfer

Note: Mettler-Toledo AutoChem suggests using the Mapper to create a **Multi-Mapping Transfer**. See **4.4 Mapper** and **Appendix B: Mapper Controls** for more information.

1. Select the **Aspirate from** vial as described in 4.5.3.1 Selecting Vials.
2. Select the **Dispense to** vials as described in 4.5.3.1 Selecting Vials.
3. Check the **Single Vial** box(es) to add solvent to only the first vial in a group.
4. Click the **Dispense Volumes >>** button.

   *The **Wildcard table** window displays:*

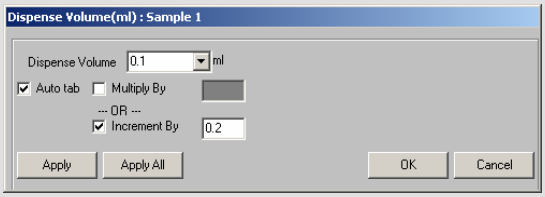


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5. Type the **Dispense Volume** in the cell associated with each sample.

Note: Sample dispense volumes may be automatically incremented.

- Double click on the first **Dispense Volume** cell to display the **Dispense Volume** window.



- Type the first **Dispense Volume** or select a value from the drop down list.
- Check the **Auto tab** box.
- Check the **Multiply By** box and type the multiplier **OR** check the **Increment By** box and type the increment.
- Click the **Apply** or **Apply All** button until all dispense volumes are entered.
- Click the **OK** button to return to the **Wildcard Table** window.

6. Click the **OK** button to return to the **Edit Parameters** window
7. Select the **System Solvent** from the drop down list.
8. Select **Pipette parameters** from the drop down list.
9. Type in the **Aspirate cannula offset** or select a value from the drop down list.

Warning: The cannula is calibrated aspirating and dispensing. Typing positive value in steps 9 or 10 may cause the cannula to crash into the bottom of the vessel. Typing a negative value may result in the cannula stopping above the vessel.

10. Type in the **Dispense cannula offset** or select a value from the drop down list.
11. Check the **Wash** box, if desired. If selected, the **Advanced Parameters** window will be presented. Edit parameters and select the **General** tab to continue.
12. Check the **Inert gas** box to add inert gas to the vial.
13. Click **Wildcards*** to specify different parameters for each sample.
14. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

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4.5.3.7. Mix Vial Contents

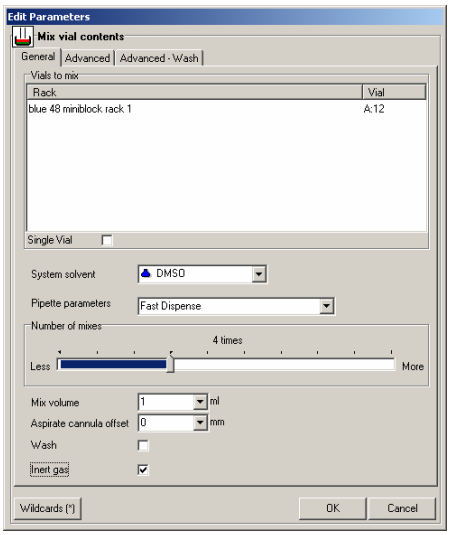


Figure 4-11: Mix Vial Contents Edit Parameters Dialog Box

1. Select the **Vials to mix** vials as described in 4.5.3.1 Selecting Vials.
2. Check the **Single Vial** box to add solvent to only the first vial in a group.
3. Select the **System solvent** from the drop down list.
4. Select the **Pipette parameters** from the drop down list.
5. Move the slider to the desired **Number of mixes**.
6. Type in the **Mix volume** or select a value from the drop down list.
7. Type in the **Aspirate cannula offset** or select a value from the drop down list.

Warning: Cannula is calibrated to the bottom of the vessel and a positive value will cause the cannula to crash into the bottom of the vessel. A negative offset greater than the height of the vessel will result in the cannula stopping above the vessel.

8. Check the **Wash** box, if desired.

*If selected, the **Advanced Parameters** window displays. Edit parameters and select the **General** tab to continue.*

9. Check the **Inert gas** box to add inert gas to the vial.
10. Click the **Wildcard*** button to specify different parameters for each sample.
11. Click the **Advanced** tab to set syringe parameters and set the inert gas timer.
12. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

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4.5.3.8. Wash Cannula

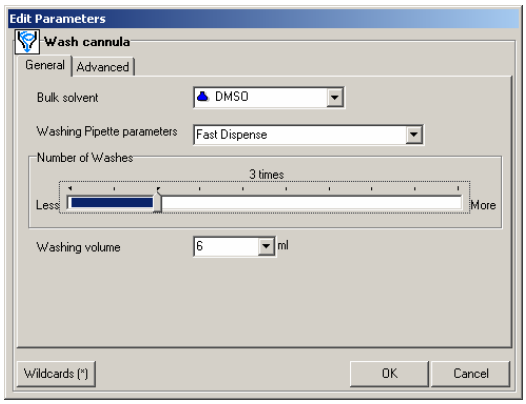


Figure 4-12: Wash Cannula Edit Parameters Dialog Box

1. Select a bottle solvent from the **Bulk solvent** drop down list.
2. Select the **Washing Pipette parameters** from the drop down list.
3. Move the slider to select the **Number of Washes**.
4. Type in the **Washing volume** or select a value from the drop down list.
5. Click the **Advanced** tab to set Washing rate, Wash delay and Additional evacuation time.
6. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

4.5.3.9. Prime

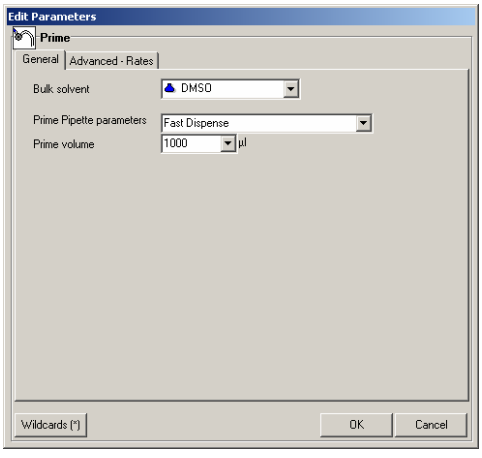


Figure 4-13: Prime Edit Parameters Dialog Box

1. Select a bottle solvent from the **Bulk solvent** drop down list.
2. Select the **Prime Pipette parameters** from the drop down list.
3. Type in the **Prime volume** or select a value from the drop down list.
4. Click the **Advanced – Rates** tab to change the Aspirate rate, Aspirate delay, Dispense rate, and/or Dispense delay.
5. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

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4.5.3.10. Wait

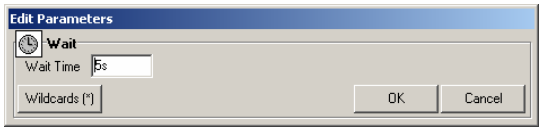


Figure 4-14: Wait Edit Parameters Dialog Box

1. Type the **Wait Time** (in seconds, not to exceed 59 seconds).
2. Click **Wildcards** to select samples for which the wait time will not be executed.
3. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.

4.5.3.11. Pause

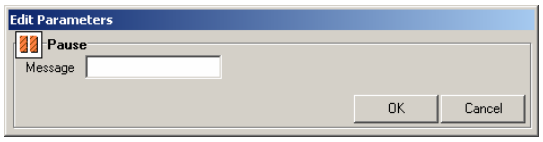


Figure 4-15: Pause Edit Parameters Dialog Box

1. Type the **Message** to be displayed.
2. Click **OK** to save the parameters.
3. Click **Cancel** to exit without saving the parameters.

4.5.3.12. Launch Executable

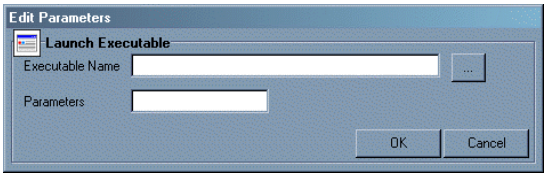


Figure 4-16: Launch Executable Edit Parameters Dialog Box

1. Click the **Browse**  button.
   *The **Open** dialog box displays.*
2. Navigate to the desired executable file and click the **Open** button.
3. Type in the **Parameters**.
4. Click **OK** to save the parameters or click **Cancel** to exit without saving the parameters.

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4.5.3.13. Group

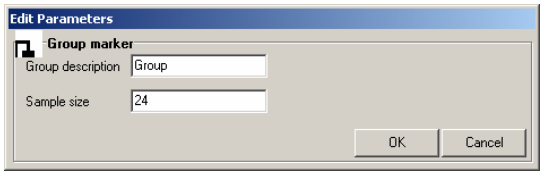


Figure 4-17: Group Edit Parameters Dialog box

1. Type in **Group description**.
2. Type in **Sample size**.
3. Click the **OK** button to save the parameters or click the **Cancel** button to exit without saving the parameters.
4. Click and drag desired steps into the Group.

   *The vials included in the group change color in the **Deck Layout** and **Rack Preview** frames.*

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4.5.4. Validating the Process

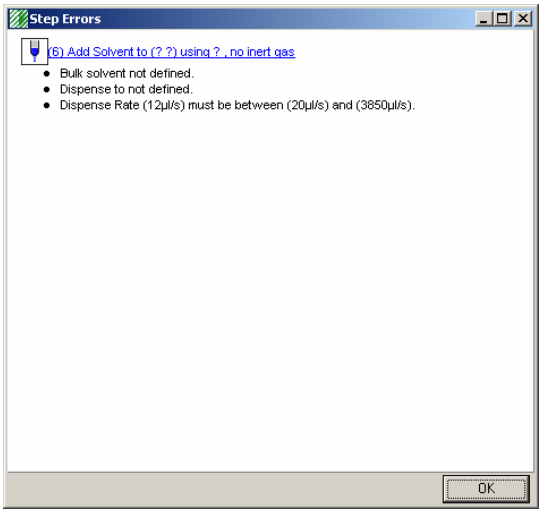
MiniMapper uses three methods of validation.

- **Status column:** When steps are added to a process the status column displays ***X***, indicating that the step details have not yet been defined. The ***X*** remains after the step details have been entered if they are incomplete or erroneous.
- **Error messages:** If step details are incomplete or erroneous an error window displays when the **OK** button is selected in the **Edit Parameters** dialog boxes.
- **Validate Process Tool:** Checks the entire process and displays an error window for each missing or erroneous step detail.

Follow the instructions below to validate the process using the **Validate Process** tool.

1. Click the **Validate** button  or select **Validate Process** from the **Validate** menu.

*If there is an error in the process, the **Step Errors** window displays:*



2. Click the blue text to open the **Edit parameters** window and correct the error.
3. Edit as required.
4. Repeat steps 2 and 3 until all errors are corrected.

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4.5.5. Saving the Process

Follow the instructions below to save the job.

1. Click the **Save as** button to save the job.

*The **Save** dialog box displays.*

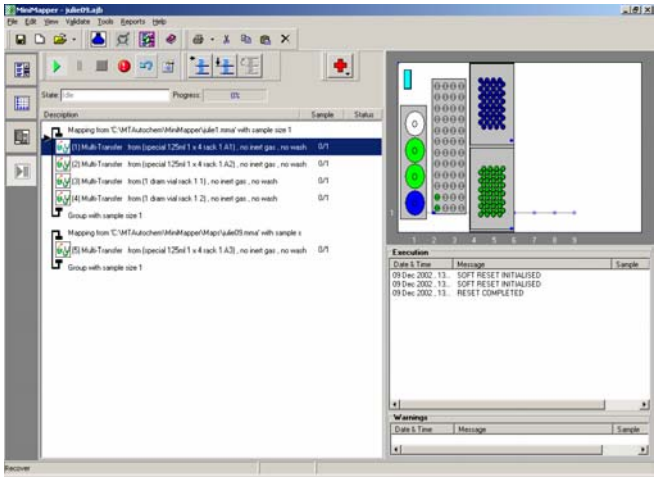
2. Navigate to the destination folder.

Tip: Create a folder on the hard drive titled “Jobs” to save all jobs in a central location.

3. Type a name for the job in the **File Name** field.
4. Click the **Save** button**.**

4.6. Running the Job

1. Click the **Execute** but .
   The ***Execute*** window displays:



2. Click the **Recover** button to reset the workstation.
3. Click the **Run** button to start the job.
   The job begins execution. Progress messages display in the ***Progress Log*** frame throughout the duration of the job.

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5. Best Practices

5.1. Best Practices for MiniMapper Use

5.1.1. Dripping Solvents

When using highly volatile solvents such as dichloromethane in a warm environment, the solvent may drip from the cannula. Selecting the proper Pipette Parameters can minimize this effect. See Section 4.3.2 Liquid Handling Parameter Descriptions for more information.

5.1.2. Saturated Solutions

The cannula may become blocked when using saturated solutions. To avoid blockage include a **Wash Cannula** step using water after each step using the saturated solution. If necessary, the cannula may be removed for offline cleaning.

5.1.3. Precipitates

Use of precipitates is not supported. Precipitates of any size may cause clogging of the cannula. Non-soluble precipitates are very difficult to clean if clogging occurs.

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6. Maintenance

This section describes how to look after and maintain the MiniMapper workstation.

6.1. Manual Operations

The Manual operations provide recovery and maintenance tools. The tools are accessed

from the **Manual Operations** button , located in the **Execute** window.

Note: If the **Manual Operations** button is unavailable (grayed out), click the Recover button to reset the workstation.

Operation	Description
Initialize Syringe	Homes the Robotic Arm and empties the syringe in the wash station. This operation can be used to discard a sample, reset the workstation, or empty the syringe for maintenance.
Change Syringe	Homes the Robotic Arm and lowers the syringe for maintenance.
Change Cannula	Moves the cannula to the front, right position of the deck for maintenance.
Empty Syringe	Recovers a sample caught in the syringe by emptying the syringe into a specified vial on the deck.
Manual Wash	Washes the cannula, without running a job.
Manual Prime	Primes the fluid line with a specified online bottle solvent, without running a job.

Table 6-1: Manual Operations

6.2. Changing a Solvent Bottle

The solvent bottle needs to be changed to use a different solvent as an online solvent.

Follow the instructions below to change a solvent bottle.

1. Unscrew the cap of the existing bottle and attach it to a new bottle.
2. Use a Prime step to clear the solvent lines the old solvent.
3. Change the entry for the solvent bottle in the Solvent Manager.

6.3.

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6.4. Emptying the Waste

The waste container must be emptied regularly to avoid overflow or backups into the system. Check the waste container before running each job to ensure that there is enough space for the job's waste.

Follow the instructions below to empty the waste container.

1. Remove the stopper from the waste container.

   Note: The waste container may be under vacuum.

2. Empty the waste into the appropriate solvent waste container.
3. Recap the waste container.

6.5. Syringe Maintenance

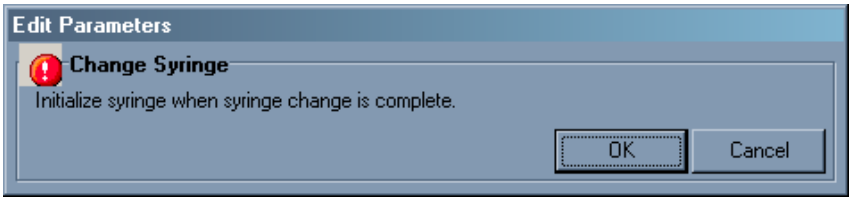
The syringe at the back of MiniMapper pumps solvent through the MiniMapper system. The glass syringe should be replaced once a year. It may be necessary to replace it more often if it breaks or leakage occurs near the top of the syringe. Syringes also come in multiple sizes.

6.5.1. Removing the Syringe

This procedure requires the use of a standard screwdriver. Follow the instructions below to remove the syringe.

1. Click the **Manual Operations** button and select **Change Syringe** from the menu that displays.

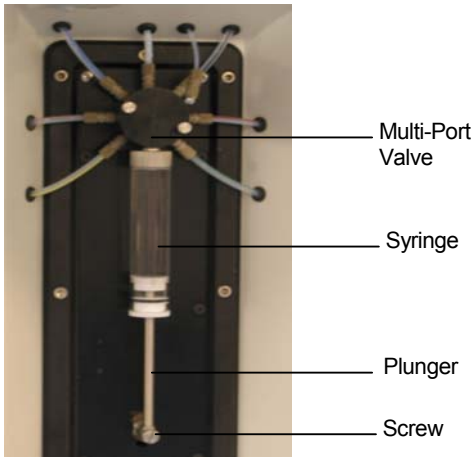
   The **Edit Parameters** dialog box displays.



2. Click the **OK** button.

   The Robotic Arm moves to the home position and the syringe lowers to the maintenance position.

3. Remove the screw connecting the syringe plunger to the syringe driver using a standard screwdriver.
4. Gently twist the syringe to the left and pull it out and down to remove it.

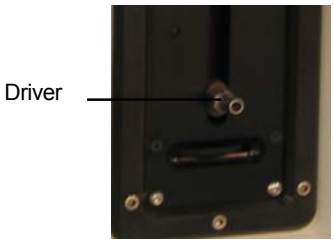


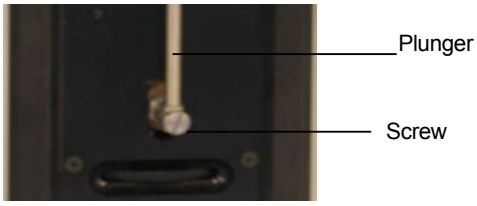
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6.5.2. Replacing the Syringe

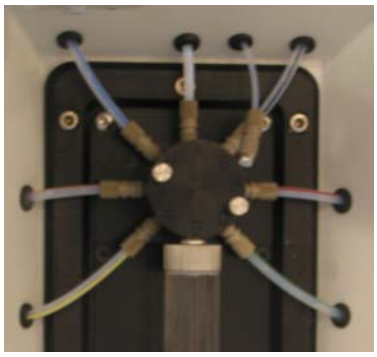
This procedure requires the use of a standard screwdriver. Follow the instructions below to replace the syringe.

1. Slide the syringe into place and twist it to the right until it is hand tight.
2. Line up the plunger with the driver, then insert and tighten the screw just until it is snug.





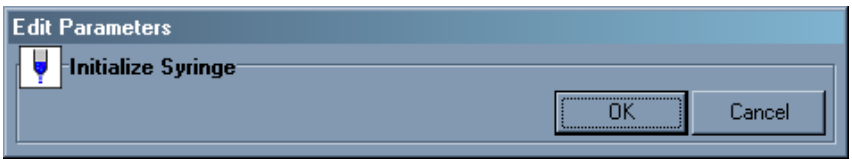
3. Check the setscrews on the multi-port valve above the syringe to ensure that they have not been loosened.



Note: If the new syringe is a small volume syringe you must also change to the small volume sample loop. See Section 6.5.3 Changing the Sample Loop.

4. Click the Manual Operations button and select Initialize Syringe from the menu that displays.

*The **Edit Parameters** dialog box displays.*



5. Click the **OK** button.

The Robotic Arm moves to the home position and the syringe initializes.

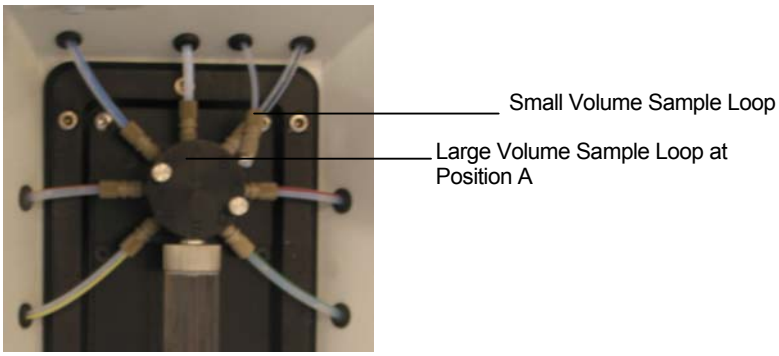
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6.5.3. Changing the Sample Loop

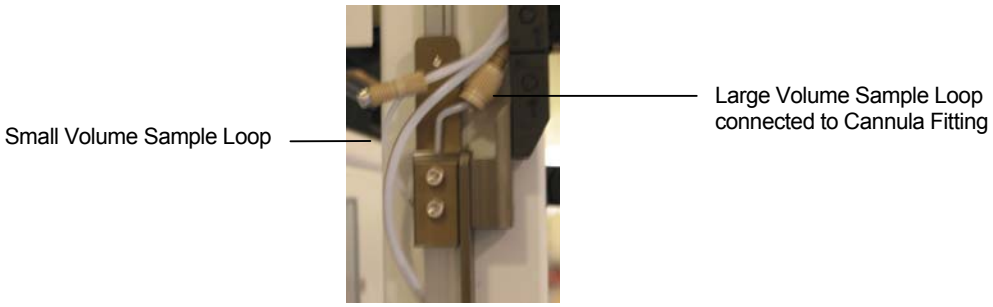
The sample loop is the tubing that carries fluid from the syringe to the cannula. Two sample loops are provide, one for large volumes and one for small volumes. Always use the appropriate sample loop for the current syringe size.

Follow the instructions below to change the sample loop.

1. Disconnect the current sample loop fitting from the multi-port valve at Position A.



2. Attach the desired sample loop fitting to the multi-port valve at Position A.
3. Disconnect the current sample loop fitting from the cannula fitting.



4. Attach the desired sample loop fitting to the cannula fitting.

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6.6. Cannula Maintenance

Several different cannulas may be used on the MiniMapper and occasionally the cannula may become clogged due to saturated solvents or drying. In order to change or clean the cannula offline it needs to be removed and replaced.

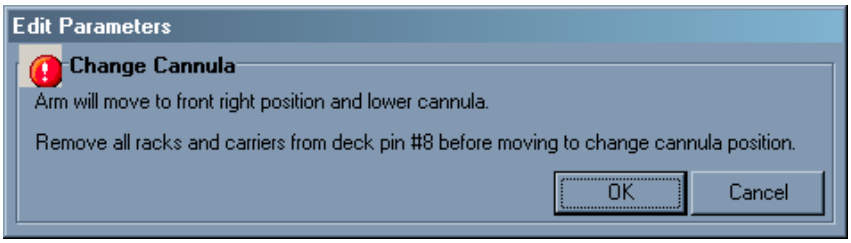
To clean the cannula offline, select an applicable solvent for the suspected material clogging the cannula. The cannula may be placed in a sonicator bath for a few minutes if necessary.

6.6.1. Removing the Cannula

This procedure requires the use of a 2.5 mm Allen wrench. Follow the instructions below to remove the cannula.

1. Click the **Manual Operations** button and select **Change Cannula** from the menu that displays.

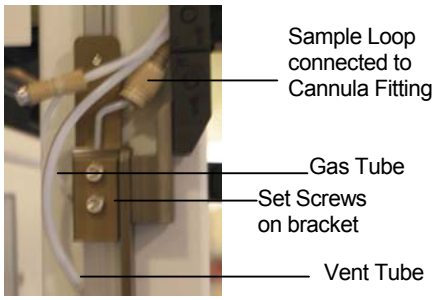
   *The **Edit Parameters** dialog box displays.*



2. Remove all racks and carries from deck pin #8 to avoid obstructions while changing the cannula.
3. Click the **OK** button.

   The Robotic Arm moves to the home position, moves to the maintenance position at the far right and front of the deck, and then lowers the cannula.

4. Disconnect the sample loop fitting (male) from the cannula fitting (female).
5. Disconnect the vent tube and gas tubes from the cannula, using sandpaper if necessary to grip the tubes.
6. Loosen the setscrews on the brackets that hold the cannula in place.

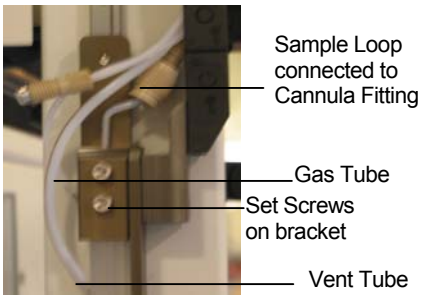


7. Slide the cannula down and back through the slots on the backs of the brackets to free it.

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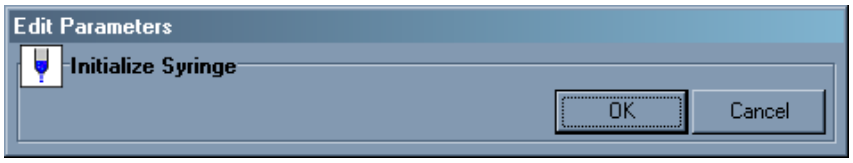
6.6.2. Replacing the Cannula

This procedure requires the use of a 2.5 mm Allen wrench. Follow the instructions below to replace the cannula.



1. Slide the cannula into the eyelet at the bottom of the Robotic Arm and then up and forward through the slots on the backs of the brackets.
2. Tighten the setscrews on the brackets that hold the cannula in place to hand tight.
3. Connect the vent tube (lower connection) and gas (upper connection) tubes from the cannula, using sandpaper if necessary to grip the tubes.
4. Connect the sample loop fitting (male) to the cannula fitting (female).
5. Click the **Manual Operations** button and select **Initialize Syringe** from the menu that displays.

*The **Edit Parameters** dialog box displays.*



6. Click the **OK** button.

The Robotic Arm moves to the home position and the syringe initializes.

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7. Troubleshooting

7.1. Hardware

Issue	Check	Corrective Action
You cannot turn the system power on	– If the emergency stop button is depressed – If the power cable is not plugged in	– Twist and pull out the emergency stop button – Plug in the power cable – Contact Mettler-Toledo AutoChem for support.
The system stops during a run	– The workstation deck and run time screen for cause of failure – For power outages during the run	– Use recovery tools to recover in the desired manner. Clear the workstation of obstacles, reboot computer, and check software job for cause of failure. – See “You cannot turn the system power on” – Contact Mettler-Toledo AutoChem for support.
The wash station is not emptying completely	– Wash Parameters – For blockage of wash valves and lines – Valve Failure	– Increase wash drain time – Clear blockage from lines – Contact Mettler-Toledo AutoChem for support.
The cannula drips	– For air in the fluid filled lines – For loose fittings around the valve and cannula	– Prime system to purge air – Tighten all fittings in the system around the syringe, valves, and cannula.
The syringe has large air gaps, fills suddenly, and doesn’t fill completely	– For solvent filter blockage – Syringe speed	– Replaces solvent filters – Reduce syringe speed

7.2. Software

Issue	Check	Corrective Action
Start-up initialization does not complete properly	– If the emergency stop button is depressed	– Twist and pull out the emergency stop button – Contact Mettler-Toledo AutoChem for support.
“Main vacuum sensor detecting failed” message displays	– Vacuum source, vacuum connections at the waste flask, and at the workstation vacuum inlet and outlet.	– Turn on vacuum pump – Insert stopper into waste flask – Fix connections
Inert gas not detected	– Inert gas source for pressure of at least 40psi or 3 bar.	– Contact Mettler-Toledo AutoChem for support.

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7.3. Liquid Handling Performance

Issue	Check	Corrective Action
Cannula drips after dispensing into sealed vials	– Syringe Parameters (Aspirate and dispense delay) – Syringe Parameters Syringe speed	– 2 second delay time – Slow down syringe speed to 20-25
Cannula drips without dispensing operation	– Connector at syringe outlet and or solvent valve. – Syringe barrel loose or nut loose – Tubing connection at cannula	– Tighten by hand until finger tight. – Tighten by hand until finger tight. – Reconnect if necessary
Solvent dispensing does not complete	– Liquid lines and solvent reservoirs – Syringe barrel loose	– Fill solvent reservoirs and prime lines before run – Finger tighten barrel and plunger nut.
Air present in lines when aspirating from reservoir	– Solvent bottle empty – Solvent lines out or above solvents – fitting on 6-way valve not tight – Fitting on Cavro 3-way inlet not tight	– Refill solvent – Place lines in solvent – Tighten all fittings
Air present in lines when aspirating from vials or reaction blocks	– Aspirate teach position to high – Teflon tubing to cannula collar is loose – Syringe barrel loose – Omni fit on Cavro 3-way outlet is loose – Vent clogged	– Re-teach position, remove cannula and check Teflon tube to collar connection – tighten fittings – remove vent tube – check for clog
Air present in syringe barrel when aspirating and dispensing	– Syringe barrel is tight – Both Omni fittings on Cavro 3-way	– Tighten syringe barrel – Omni fittings on Cavro 3-way
The syringe has large air gaps, fills suddenly, and doesn't fill completely	– For solvent filter blockage – Syringe speed	– Replaces solvent filters – Reduce syringe speed
Air in lines Wash Station Overflow line in use	– Syringe Parameters – Syringe speed	– Slow down aspirate speed to 20-25.

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7.4. Arm and Cannula

Issue	Check	Corrective Action
Arm position misaligned with rack and vial	– Calibration	– Contact Mettler-Toledo AutoChem for support.
Cannula hits bottom of vial	– Offsets	– Adjust offsets in Liquid Manager – Contact Mettler-Toledo AutoChem for support.
Cannula does not reach liquid in vial	– Offsets	– Adjust offsets in Liquid Manager – Contact Mettler-Toledo AutoChem for support.

7.5. Contacting Customer Support

If you have any problems with MiniMapper that are not addressed in this Help file or the User Guide, contact us. Please have the following information ready:

– A description of what you were trying to do with MiniMapper.
– Details about what happened when the system failed to work as you expected.

For technical support issues, please contact your local Mettler-Toledo office.

You can also visit our web site at www.mtautochem.com.

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Appendix A: Accessories

Syringe Options:

1.0 mL Replacement Syringe (15803089)

2.5 mL Replacement Syringe (15803090)

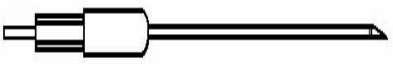
5.0 mL Replacement Syringe (13505033)

10.0 mL Replacement Syringe (15803068)

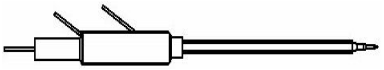


Replacement Cannulas:

2-Channel Septum Piercing Grooved Cannula (13559293): Solvent channel and groove acting as a passive vent.



3-Channel Septum Piercing Cannula (13559292): Vent Channel, Inert Gas Channel, and Solvent Channel.



Vials

40 mL Scintillation Vial (13520029): High quality scintillation vial with durable cap and septum. Works with MT part number 13530911.



125 mL Stock Vial (13520027): High quality stock reagent vial with durable cap and septum. Works with MT part number 13530005 and 13530012.



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Appendix B: Mapper Controls

The Mapper offers many tools accessed by menus and buttons. There are many options for changing the view and customizing the window.

Note: In the **Grid View** frame normal Windows short cuts and editing tools are available for editing the mapped steps. For example, hold **<Ctrl>** while clicking on rows in the grid to select all of the rows at once.

The following sections describe the menus and tools available.

B.1. Toolbar

The toolbar buttons, located along the top of the Mapping Window, provide short cuts to operations available in the menus (see Figure 4-3: Mapper). Tools that are not available are grayed out. The toolbar is customizable.

B.1.1. Available Tools

The following table lists all available tools and their descriptions.

Tool	Description
	Exit: Closes Mapper.
	Open Configuration: Opens a different configuration file.
	Open Mapping: Opens an existing Mapping file.
	Import Mapping: Imports an existing Mapping file.
	Import Volumes: Imports a RVL file.
	Export Mapping: Exports mapping data in comma-delimited format for use in a different program.
	Export Volumes: Exports the current volume levels to generate a RVL for future use or a comma delimited file for use in a different program.
	Save Configuration: Not Available.
	Save Mapping: Save the current Mapping.
	Save Configuration As: Not Available.
	Save Mapping As: Save the current mapping with a different name.

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	Insert Row: Inserts a new row above the currently selected (or active) row.
	Delete Row: Deletes the currently selected row. Tool only available when a row is selected. Click on the row number to select a row.
	Select Active Racks: Allows specification of active racks. Only available before steps are added. Click the button to display a dialog box listing all the racks on the deck, click the check boxes to select/deselect a rack, and then click **OK**. The selected racks display in the **Deck View** Frame.
	Check Interference: Checks the deck for layout errors.
	Validate Mapping: Validates the current Mapping.
	Deck Editor: Not Available.
	Rack Editor: Not Available.
	Preferences: Opens preferences dialog box for customizing the widow display.

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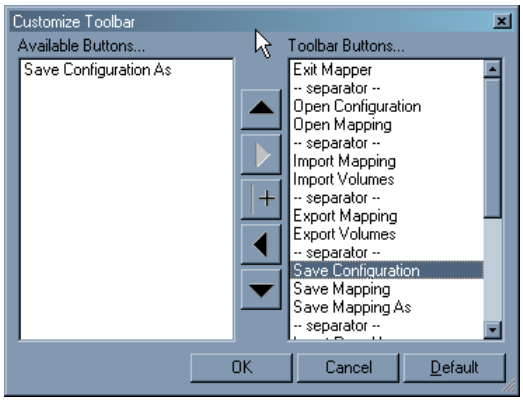
B.1.2. Customizing the Toolbar

The toolbar is customizable. The buttons can be removed and added and separators can be added between any two buttons. Select **Toolbar Captions** from the **View** menu to show captions on each of the buttons. Select **Main Toolbar** from the **View** menu to hide the toolbar and repeat to display it again.

Follow the instructions below to customize the toolbar.

1. Double-click the toolbar or select **Customize Toolbar** from the **Tools** menu to reconfigure the toolbar.

   *The **Customize Toolbar** dialog box displays:*



2. Select one or more buttons from the **Available Buttons…** list and click the right arrow to add it to the toolbar.

   OR

   Select one or more buttons from the **Toolbar Buttons…** list and click the left arrow to remove it from the toolbar.

3. Click an item in the **Toolbar Buttons…** list and then click the **Add Separator**

    button to insert a separator below the selected item.

4. Click an item in the **Toolbar Buttons…** list and then click the up or down arrows to move the item in the toolbar order.

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B.2. View and Selection Tools

The View and Selection tools are located along the left hand side of the **Mapper** Window (See Figure 4-3: Mapper).

Tool	Description
	Selection mode: used for normal, default, operations such as selecting vessels for mapping. The cursor displays as the standard arrow .
	Full Deck view: re-centers and zooms out to display the entire deck in the **Deck View** Frame. The selection tool is automatically selected after the view change is complete.
	Active Rack view: Re-centers and zooms to display the active rack in the **Deck View** Frame. The selection tool is automatically selected after the view change is complete.
	Zoom to Selected Area tool: Zooms in on the next selected area. The selection tool is automatically selected after the view change is complete.
	Zoom In tool: Zooms in on the center point of the current display in the **Deck View** Frame. The selection tool is automatically selected after the view change is complete.
	Zoom Out tool: Zooms out on the center point of the current display in the **Deck View** Frame. The selection tool is automatically selected after the view change is complete.
	Zoom mode: used to zoom in and out. The cursor displays as a magnifying glass. Left click () to zoom in and right click () to zoom out.
	Pan mode: used re-center the view. The cursor displays as a hand. Left click and drag (the mouse "grabs") to move a different area of the deck into view.
	Deselect tool: Deselects the current destination vessels. This tool is only active when the cursor in the **Grid View** Frame is in a **Dispense To** cell.

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B.3. Changing Preferences

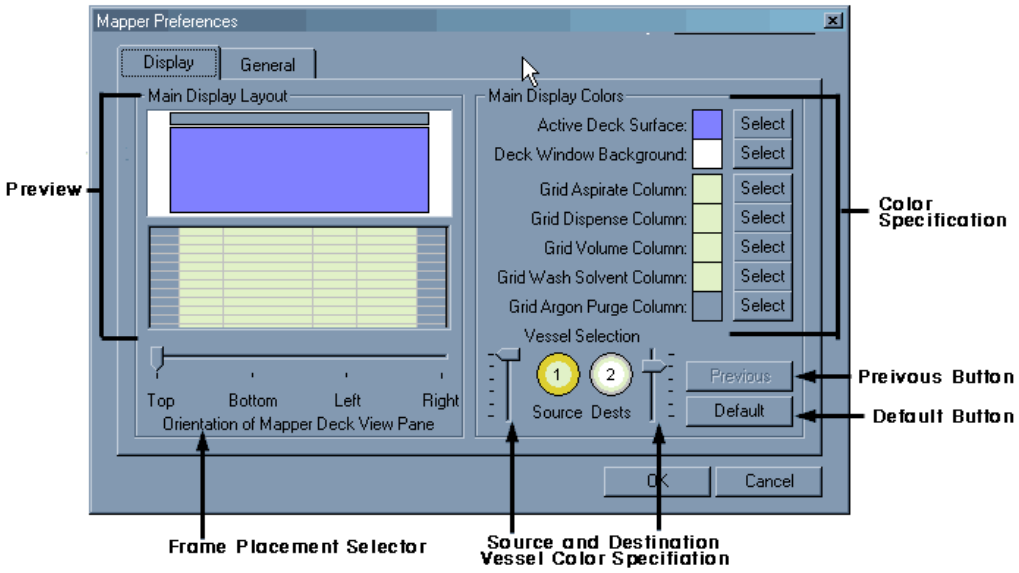
The Mapper allows customization of display properties such as color schemes and properties. Follow the instruction below to change the preferences.

1. Click the **Preferences** button or select **Preferences** from the **Tools** menu.
   *The **Mapper Preferences** dialog box displays, defaulted to the **Display** tab.*

2. Change the desired properties in the **Display** and **General** tabs. See the following sub-sections for details.
3. Click the **Ok** button.

B.3.1. Display Tab

The **Display** Tab allows configuration of the color scheme and the frame orientation.

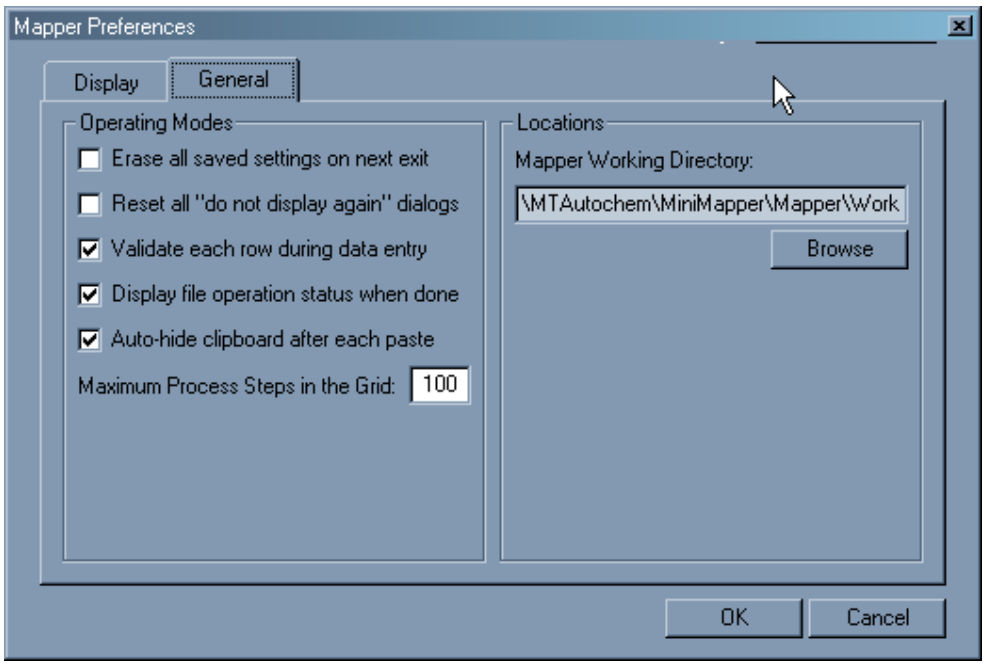


- Preview: This area displays a preview of the changes being made.
- Frame Placement Selector: Rearranges the frames. Move the slider to select the new position of the **Deck View** Frame. The **Grid View** Frame will occupy the opposite position.
- Source and Destination Color Specification: Changes the highlighting color of the vessels to one of six colors. Move the slider to select a color and view it on the sample vessel drawing.
- Previous button: Click to restore the beginning settings.
- Default button: Click to restore the factory default values.
- Color Specification: Click the **Select** button next to an item to change its color. A Windows color dialog displays and the new color can be selected.

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B.3.2. General Tab

The **General** Tab allows configuration of operating modes and the default file directory.



- **Erase all saved settings on next exit**: Resets all default settings when the program exits.
- **Reset all "do not display again" dialogs**: Resets dialog boxes where the **Do not display again** check box has been selected.
- **Validate each row during data entry**: Validates each step before allowing another step to be added. Validation checks the existence of racks and vessels and the amount of reagent aspirated or dispensed, to ensure that vessels are neither exhausted nor overflowed.
- **Display file operation status when done**: Displays a dialog box that provides the status of the action attempted after every file operation.
- **Auto-hide clipboard after each paste**: Hides the clipboard when a paste operation is completed. Otherwise, once the clipboard is made visible, it remains on the screen in front of other objects unless explicitly hidden.
- **Maximum Process Steps in the Grid**: Limits the number of steps that may be specified according to the value typed in the field.
- **Mapper Working Directory**: Specifies the default directory for saving and opening files.

B.4. Menus

Mapper follows the standard Windows convention for menus. Most menu items have a keyboard accelerator key. Press the Alt key to activate accelerators and then the letter that is underlined on the item to invoke it. For example, type ALT F N to access **New Mapping** on the **File** menu. Some items also have shortcut keys, which are listed in parenthesis next to the items. The following sections describe each menu item in detail and list the shortcut when applicable. Menus shown with an ellipsis (…) at the end have submenus or activate dialog boxes.

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B.4.1. File Menu

The file menu controls file operations such as opening files and importing or exporting data.

New Mapping

Abandons the current mapping, empties the grid, and clears the racks from the deck. The current workstation configuration remains loaded. Proceed by selecting new racks to be loaded on the deck. A warning dialog will be displayed if the current mapping has not been saved. This option is only available when racks are loaded on the deck.

Open Configuration…

Loads a new workstation (deck) configuration from a Mapper Workstation Configuration file (MWC file). Such files specify the geometry and characteristics of the workstation deck, including what racks are available to be loaded on the deck, what reservoirs are available, and what standard deck equipment is available.

Open Mapping … (Ctrl+O**)**

Loads the workstation configuration file and the mapping file that was selected. Every mapping file has an associated workstation configuration file. When the mapping file is opened, the file name of the workstation configuration file is retrieved, and that file is then opened before any other mapping file processing is performed.

Import Mapping …

Reads and loads externally generated mapping files in a comma delimited format. Such files may be created with applications like Microsoft Excel. Before loading the file, you are prompted to decide how the mapping data is placed into the current mapping by making a selection from a dialog box.

Import Volumes…

Reads and loads an RVL file to set the initial volumes of all the vessels on the deck, overwriting default volumes.

Export Mapping …

Saves mapping file for access by an external application in either comma delimited (CSV) or plain text format. The former is suitable for use in other applications such as Microsoft Excel, or to be imported back into another Mapper process: using the Import Mapping feature.

Export Volumes…

Saves Vessel volumes file for access by an external application in either comma delimited or plain text format. When exporting in CSV format, the file is considered to be the “final volume table” and it contains the volumes of all vessels in all racks In RVL format, the operator selects which racks on the deck are to be considered, and only those vessel volumes are exported.

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Save Configuration

Saves workstation configuration after using the Mapper Deck Editor to create a new workstation configuration (deck) or to modify the one that is loaded. The deck editor and rack editor (see below) are used to manipulate the geometry and attributes of the deck and to create, modify, or delete racks that are used with that deck, respectively.

Save Mapping (Ctrl+S**)**

Saves the mapping file. This selection is available when at least one mapping step has been entered into the grid. If a mapping file is already opened or a new one has already been saved, this selection quietly saves the current data, replacing the same file. If no mapping file is already opened or if this is the first save from a new mapping, a file name will be requested. Mapping files use the extension MMA.

Save Configuration As…

Saves the configuration after prompting for a file name. This allows the operator to create multiple workstation configuration files, or to change which file is being edited. For example, a baseline deck with two racks could be created and saved, then four more racks added, and that configuration saved under a different name.

Save Mapping As…

Saves the Mapping file after prompting for a file name. This allows the operator to create multiple mapping files, or to save a mapping in different process: stages. For example, a mapping could be saved after 10 steps were entered, then again after 30 steps, 50 steps, etc., each time using a different mapping file name.

Save Workspace As… (Ctrl+W**)**

Creates an empty mapping file that can be used as a template for future mapping. Regardless of how many mapping steps are present in the grid, none are written to a workspace file. This way, the operator can open this file just like any other mapping file and have the racks loaded on the deck with no mapping steps present.

1 ***Mapping File name***

Displays up to five of the last used mapping files near the end of the file menu, numbered 1 through 5. This is a shortcut to using the “Open Mapping” menu described above. The file opens when selected.

Exit

Use this selection to conclude the mapping session and terminate the Mapper application. If the configuration or mapping has not been saved, a confirmation dialog box displays.

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B.4.2. Edit Menu

The edit menu operations apply to the rows of the mapping grid. In general, rows (steps) must be selected for most of these functions. To select a row, click on its step number. To select a range, click on the first step, hold <shift>, and click on the last step of the range, or click and drag from the first step to the last step in the range. To select non-contiguous steps, hold <CTRL> and click the desired steps.

Cut Selected Steps to Clipboard (CTRL+X**)**

Deletes the selected steps from the mapping and copies them to the current page in the clipboard. This operation also renumbers subsequent steps as needed.

Copy Selected Steps to Clipboard (CTRL+C**)**

Copies the selected steps to the clipboard. Nothing changes in the mapping grid.

Paste Clipboard Contents (CTRL+V**)**

Inserts all of the steps on the current page in the clipboard above the selected location in the grid. Appends the contents of the clipboard to the end of the current mapping if no location is selected.

Insert Step(s)

Inserts empty steps, as specified, above the lowest selected step.

Delete Step(s)

Deletes all of the selected steps from the mapping grid. This operation also renumbers subsequent steps as needed.

Clear Step(s)

Clears all of the selected step data, without deleting the whole step.

Undo (CTRL+Z**)**

Reverses the last single action that changed the contents of the grid. Only one (1) undo step is available in Mapper.

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B.4.3. View Menu

The View menu controls the visibility of several features in Mapper.

Main Toolbar

Enables or disables display of the main Mapper toolbar along the top of the application. Hiding the toolbar increases the amount of space for other elements of the display without any loss of functionality.

Toolbar Captions

Enables and disables captions on the toolbar. Captions remove the ambiguity of the function of each tool, and can be useful in situations where a number of similar looking buttons are configured. Enabling captions automatically makes all the buttons larger.

Vessel RVID Format

➢ **Numeric Only:** references all vessels in all racks by their vessel number, regardless if the rack is capable of displaying alpha-numeric vessel numbers or not. Independent of this setting, you may always type either full numeric or alphanumeric values for the vessels in the grid.

➢ **Alphanumeric:** displays vessels in a matrix format, typically with row letters and column numbers. When this selection is checked on, all such vessels are displayed in the grid in this manner. Independent of this setting, you may always type either full numeric or alphanumeric values for the vessels in the grid.

Deck Equipment

N/A

Grid Clipboard

Enables and disables the clipboard (displayed automatically when you cut or copy steps). Depending on the setting in the preferences dialog, the clipboard will automatically hide itself when you paste. The grid clipboard must be visible to select from among its eight different pages for cutting/copying/pasting.

History Narrative

Enables and disables the availability of the History Narrative. The narrative displays information on vessels on the deck when right-clicked.

Mapping Narrative

Enables and disables the availability of the Mapping Narrative. When enabled, the mapping narrative will automatically attach itself to the left or right edge of the main Mapper application window, wherever there is the most room. At the same time, the main Mapper application window is pushed to the extreme edge of the display to provide the most room for the narrative window. The narrative window matches the size of the main window.

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B.4.4. Workstation Menu

Items on this menu are related to the operation of the workstation configuration.

Select Racks for Mapping

Allows specification of which racks are displayed from the racks available in the current configuration. This option is available when there are no mapping steps in the grid. When a rack is on deck, its vessels are available to Mapper. Once you have begun mapping, you will not be permitted to add or remove racks.

Check Deck for Interference

Ensures that no object, rack or equipment, interferes with another object. This function is performed automatically whenever racks are added to the deck. The workstation configuration file specifies what margin must be maintained around each object before interference is flagged.

Validate Mapping Steps

Validates all of the mapping steps in the grid.

Edit Deck Configuration

Creates a new deck when there is no deck (workstation configuration) loaded or allows editing of the properties of the deck if a deck is loaded but has no racks.

Edit Rack Configuration

Allow s creating or editing racks that are bound to the deck.

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B.4.5. Tools Menu

The tools menu provides a number of unrelated features and functions for Mapper.

Grid Settings

➢ **Destination Auto-Tab:** Enables (and disables) the mapping grid cursor to move over to the destination cell as if TAB has been pressed after clicking a vessel as a source.

➢ **Fixed Width Columns:** Enables and disables the automatic sizing of the columns in the mapping grid. Default value is ON. If you prefer to set those columns that are normally fixed to different widths, check this OFF, and set the widths manually. The destination columns will still auto-size even when you have set the widths of the other columns.

> **Note:** You can also right-click on the heading of the "Step" column on the grid to access these options.

Preferences

See B.3 Changing Preferences.

Customize Toolbar

See B.1 Toolbar.

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B.4.6. Help Menu

This menu provides operational information about Mapper.

Memory

Displays a dialog box that depicts the amount of system memory presently in use. This feature is used mainly as a diagnostic tool to help technical support diagnose issues with the operation of Mapper. Frequently on Windows, memory use by all programs running on a computer will have an impact on the operation of one application.

About / Register

The About dialog is another diagnostic tool that provides version information and other details about Mapper. It is also the place where Mapper can be re-registered with an alternate key. This dialog automatically appears every time Mapper starts and it has not been registered.

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