PlateLoc™ User Manual

version 2.1

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Chapter 1: General Information

Introduction

Thank you for purchasing a Velocity11 PlateLoc thermal plate sealer. The PlateLoc is a self-contained module for applying thermal seals to microplates. These seals prevent contamination and evaporation of valuable samples during transport or storage. The PlateLoc consistently achieves a high quality seal with its sophisticated thermal control system. The PlateLoc needs no adjustment to seal plates of various heights. The PlateLoc's small footprint allows easy robotic integration, and its touch screen display enhances usability in manual applications. Above all, the PlateLoc's processing time and operating costs are significantly less than competing products, making it the optimal solution for both manual and automated sealing applications.

The purpose of this guide is to provide the basic information necessary to achieve the optimal performance from your PlateLoc. Whether your application is manual plate sealing, or integration into a larger automation platform, this user's manual will walk you through the required steps to get your unit working to its fullest capacity.

Velocity11 strives to produce the highest throughput and highest quality products available for the laboratory automation market. Technical information on the PlateLoc and other exciting Velocity11 products are available from Velocity11. With questions or comments, please contact our Service Center at (650) 846-6500 or visit our website at: http://www.velocity11.com.

System Requirements

Stand Alone Unit

- 8.5" x 13.5" benchspace
- 1/4" compressed air line capable of supplying 2.5 cfm at 90 psi with 0.05 µm filtration
- 120 VAC, 50-60 Hz, 5 amps (factory installed 220 VAC models are also available)

Automated Platform

- Same as the stand alone unit above
- Pentium 166 or better PC
- Windows NT4, Service Pack 6 or Windows 2000
- 32 MB RAM
- Serial I/O RS-232 9 pin connector

Warranty Information and Service Contracts

All Velocity11 products are covered under warranty for parts and labor for the first year of service (see table 1).

Table 1: Velocity11 Standard Service Warranty

	Standard Service
Shippable Items	The damaged unit will be shipped to Velocity11 for repair. Upon repair, the unit will be shipped back to you.
Non-Shippable Items	A technician will be dispatched to your site the next business day, not including holidays.

For the product warranty for this PlateLoc, please refer to “Velocity11’s Product Warranty” on page 51”.

Warnings and Advisories

Your safety while utilizing the PlateLoc is of **paramount importance** to Velocity11. Carefully read and follow all warnings and cautions that are outlined in this manual. *The PlateLoc must only be used in the manner in which it was intended by Velocity11.* Any other use of the PlateLoc may cause damage to the product, samples, or harm to the user. Take note of the following signs. They call attention to a procedure that if not correctly performed, could result in a hazardous condition or damage all or part of the product. Do not proceed beyond a warning label until the indicated conditions are fully understood and met.

WARNING **Warning signs signal procedures that will potentially cause bodily harm or death if not performed correctly.**

CAUTION **Caution signs signal procedures that will potentially cause damage to the instrument if not performed correctly.**

NOTE *Note signs indicate points that are important in order to correctly setup or use the PlateLoc. No danger is involved.*

This unit is currently being evaluated and tested for full CE and UL certification.

Any modifications or changes to the PlateLoc not expressly approved in this manual could void your warranty and authority to operate this equipment.

Chapter 2: Installation

Unpacking the PlateLoc™

The following is a complete list of the contents of the Velocity11 PlateLoc packages.

- PlateLoc
- Seal material
- Power cable
- Serial communications cable
- 15 feet of 1/4" polyurethane tubing
- Three hose fittings (*optional depending on your house air configuration*)
  - 1/4" quick connect - 1/4" NPT
  - 1/4" quick connect - 1/8" NPT
  - 1/4" quick connect T
- NAFD2000 0.01 µm air filter
- *NAFD2000 Filter Installation Instructions*
- Seal roll axle & hubs
- Plate locator
- Support inserts
- *PlateLoc User Manual*
- PlateLoc ActiveX CD

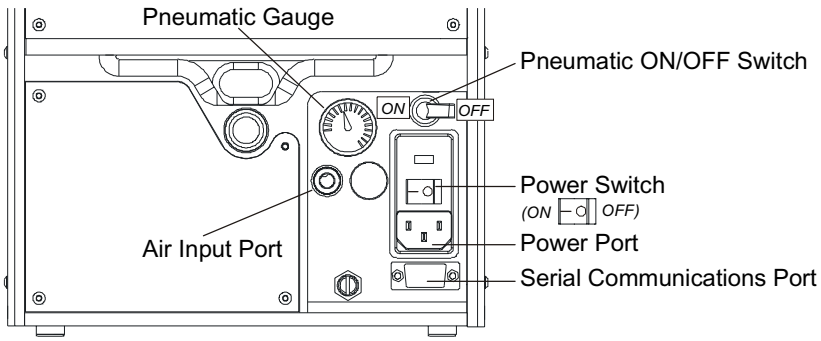
Inspection

Check that all items from the list above have been included in the PlateLoc packages. Inspect all items for possible shipping damage before continuing the installation process. If anything is missing or appears damaged, contact a Velocity11 service representative as soon as possible.

NOTE *Save the carton and packing materials in case you ever need to ship the unit.*

Installation

Figure 1: Control Panel Air and Power Connections



Install the Compressed Air Line

WARNING **Working with open, charged air lines can result in injury. Proper procedure should be used to bring an air line into the system. If you have any questions, contact your facilities department or a Velocity11 service representative.**

Before installing the compressed air line, ensure that the air system can consistently supply 2.5 cfm at 90 psi to the PlateLoc. Any drop in air pressure may reduce the performance of the unit.

CAUTION **Do not allow the input air pressure to exceed 145 psi. The PlateLoc cannot withstand pressure above 145 psi.**

Additionally, confirm that the air supply is clean, dry air. The NAFD2000 0.01 µm air filter is included in your PlateLoc packaging. This filter must be installed in the air line going to the PlateLoc. A detailed instruction sheet on installing the NAFD2000 0.01 µm air filter is included in your PlateLoc packaging.

CAUTION **Ensure that the air line coming into the PlateLoc is filtered from moisture and oil. Significant moisture or oil can adversely affect the life of the unit. The NAFD2000 air filter is included with the PlateLoc to help filter out excess oil from the air flow.**

CAUTION **Switch off air supply before connecting the air line to the PlateLoc.**

1) Turn the pneumatic ON/OFF switch on the rear of the PlateLoc to the OFF position (toward the outside of the machine. See figure 1).
2) Cut two lengths of 1/4" polyurethane tubing to the length you need for the air line.

3) If your air supply uses a threaded fitting, attach the 1/4" NPT fitting to the nozzle. Attach the 1/4" one touch hose fitting into the 1/4" tubing. If your lab already uses 1/4" tubing, use the T fitting to connect to the existing tubing as close to the source as possible.

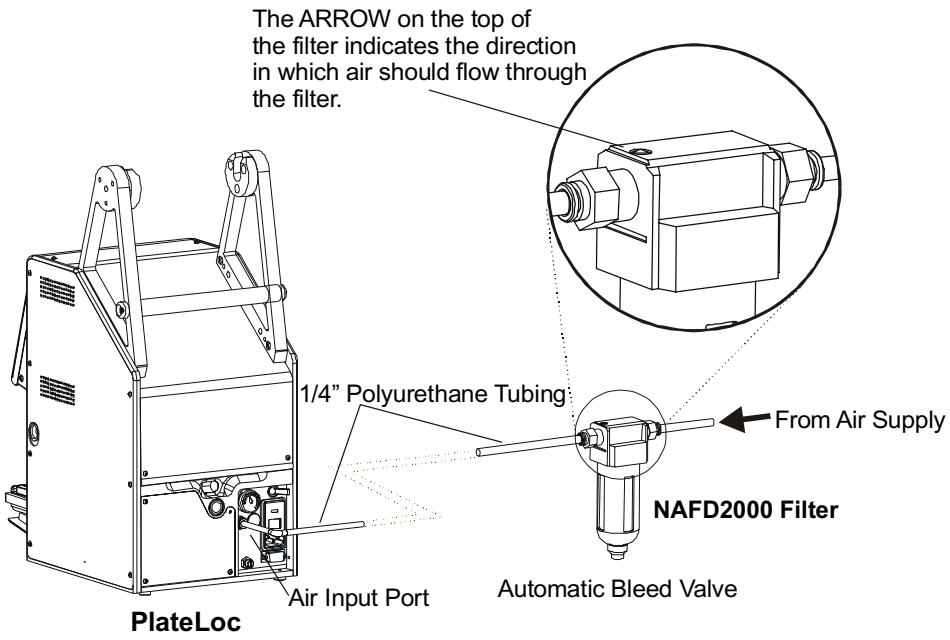
CAUTION **For more detailed instructions on installing the NAFD2000 air filter with your air supply line, refer to the sheet "Installing Your NAFD2000 Air Filter" included with your PlateLoc.**

4) Attach the other end of the 1/4" tubing to the quick release input of the included NAFD2000 air filter (see figure 2). Tug gently on the line. If you feel resistance, the line has been properly installed.

5) Attach one end of a second length of 1/4" tubing to the quick release output of the NAFD2000 air filter. Tug gently on the line to ensure it has been properly installed.

CAUTION **The ARROW on the top side of the NAFD2000 filter indicates the direction in which air should flow through the filter. Attaching the filter incorrectly will cause damage to the filter.**

Figure 2: Air Line Layout Diagram



6) Insert the other end of the 1/4" tubing into the quick release air input port on the back of the PlateLoc (see figure 1).

7) Tug gently on the air line after installing it into the PlateLoc. If you feel resistance, then the line has been properly installed.

8) Turn on the air supply. Listen for leaks in the air line connections.
9) Turn the pneumatic ON/OFF switch for the PlateLoc to the ON position (toward the inside of the machine, see figure 1). When you turn the air supply on, the door will open and the stage will extend.

WARNING **When you turn the air supply on, the door will open and the stage will extend. Keep the area in front of the PlateLoc clear.**

10) Check the pneumatic gauge on the rear of the PlateLoc to ensure it reads approximately 90 psi.

Install the Power Cable

CAUTION **Operating the PlateLoc at the wrong voltage could seriously damage the instrument.**

Before turning on the system, ensure that the voltage supplied to the PlateLoc system is 120 VAC, 50-60 Hz, and the line is rated to supply a minimum of 5 amps. Also ensure that the red box directly above the power switch reads 120V. If it does not, contact your Velocity11 service representative. *220 VAC models of the PlateLoc are available but must be factory installed. Contact Velocity11 for more details.*

1) Turn the power switch on the back of the PlateLoc to OFF position (see figure 1).
2) Plug one end of the power cable into the 120 VAC power port on the rear of the PlateLoc (see figure 1).
3) Plug the other end of the power cable into a grounded electrical socket.

WARNING **The PlateLoc is an automated piece of equipment with moving parts. Ensure that hair, clothing, and jewelry do not become caught in the machine.**

Install the Serial Communications Cable

NOTE *For automated control users only. If you are only using the PlateLoc manually, skip this section.*

The serial communications cable is only necessary if you wish to command the PlateLoc remotely or if the PlateLoc is part of an integrated robotic system.

1) Plug one end of the serial communications cable into the RS-232 serial communications port on the rear of the PlateLoc (see figure 1).
2) Plug the other end of the serial communications cable into the available serial port on the PC you will use to control the PlateLoc.

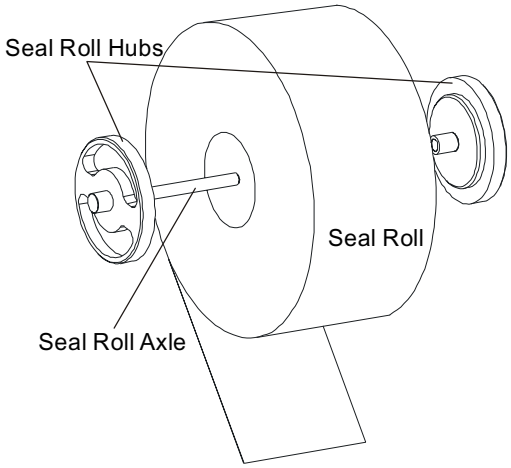
Setting up the PlateLoc™

Mounting the Seal Roll

CAUTION **Before mounting the seal roll, ensure that the power is off and the air pressure is on.**

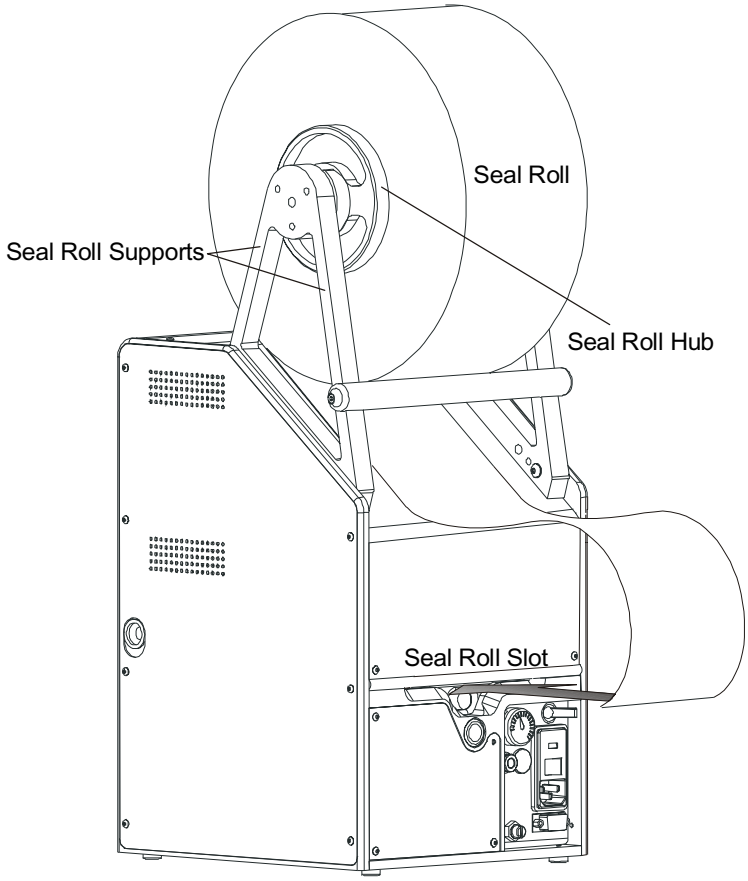
1) Remove the seal roll, seal roll hubs, and axle from their packaging.
2) Take one of the seal roll hubs and screw it 15 to 20 turns onto the seal roll axle.

Figure 3: Seal Roll Axle and Hubs



3) Place the seal roll onto the axle (see figure 3). The roll should fit snugly against the seal roll hub.
4) Screw the second hub onto the axle. Tighten until the hubs are securely holding the roll.
5) Using scissors, make a clean straight cut across the end of the seal material, cutting off any part of the seal that is wrinkled or torn. The PlateLoc will not work with wrinkled seal.
6) Place the seal roll with hubs and axle onto the seal roll supports. The roll should be placed so that the seal feeds from the underside of the seal roll, as opposed to feeding from the top of the roll. The roll fits tightly between the two seal roll supports (see figure 4).

Figure 4: Proper Seal Mounting and Loading

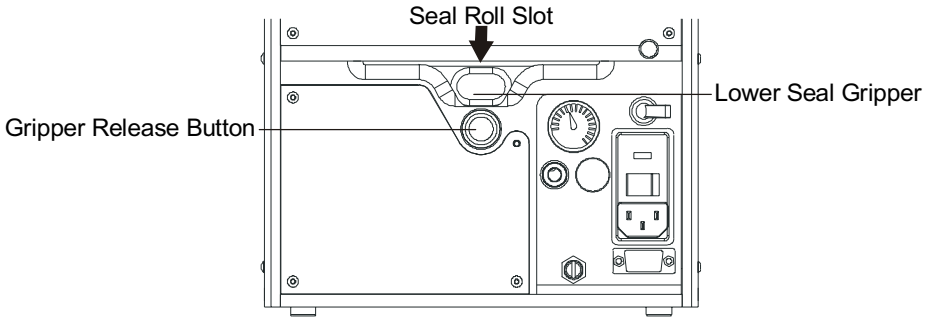


Loading the Seal

After the seal roll is mounted, the seal itself must be loaded into the machine.

1) Feed the seal from the front of the roll toward the back along the top of the machine and down the back. Be sure to feed the seal under the bar connecting the roll supports (see figure 4).

Figure 5: Control Panel - Seal Gripper Detailed View



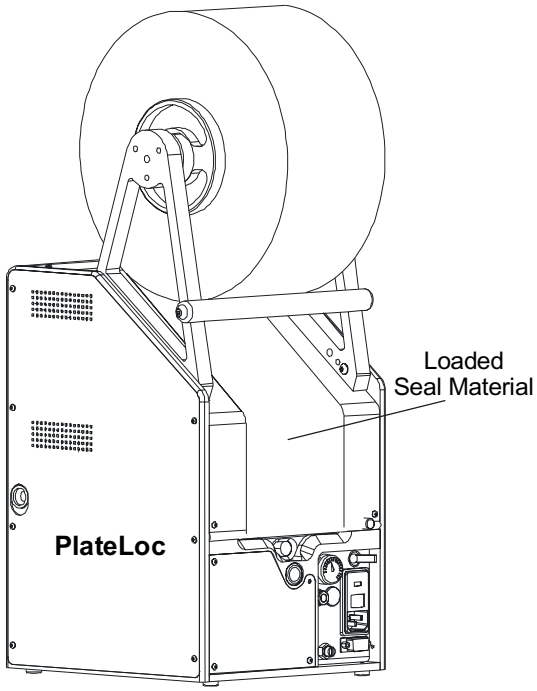
WARNING **The following procedure for loading the seal roll should ONLY be followed when the machine is cold (room temperature). For instructions on reloading the seal roll while the machine is hot, refer to "Reloading Seal Material into a Hot Machine" on page 39.**

2) Press the silver gripper release button (see figure 5). You should hear the gripper snap closed.
3) Open the seal gripper by pushing the lower seal gripper down until it clicks into place (see figure 5).
4) Using a pen or marker, mark the seal material 7" from the end.
5) Feed the material into the seal roll slot directly above the lower seal gripper (see figure 5).

NOTE *If you have problems loading the seal, ensure that the edge entering the machine has not curled down. Curl the edge up by hand to remove any downward curl.*

6) Look into the front opening of the machine. After a few inches of seal material have been fed in, you should see the seal material emerging into the main sealing chamber. Keep feeding the seal material until the 7" mark just disappears. Ensure that the emerging edge of the seal is centered.
7) Close the seal gripper by pressing the silver gripper release button under the gripper. You should hear the gripper snap closed.
8) Gently roll any slack back up into the seal roll. Be careful not to pull the seal out of the machine. The seal should look like the example in figure 6 when loaded correctly.

Figure 6: Properly Loaded Seal Roll

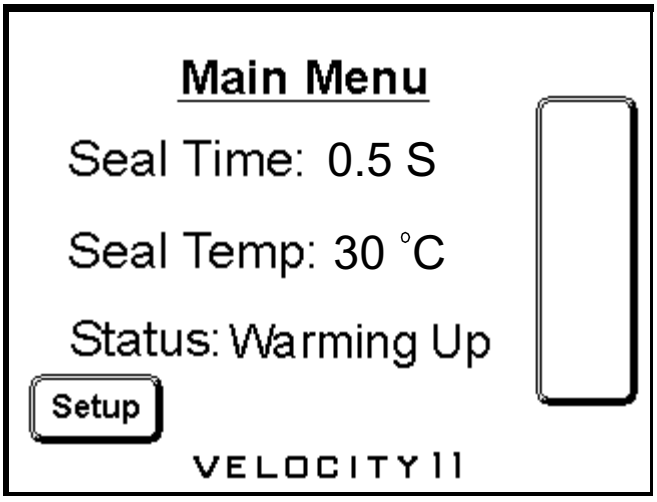


Cold Running the PlateLoc

After installing the PlateLoc, the machine should be cycled five times at a cold temperature and without a plate. This ensures that the PlateLoc is functioning properly and the seal material is feeding correctly.

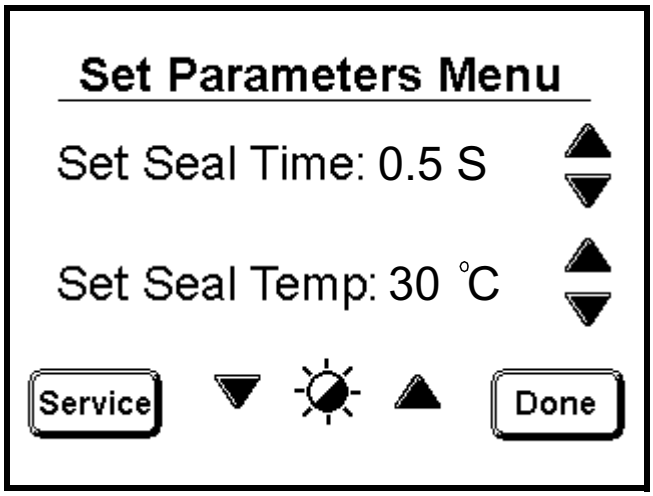
1) Turn on power to the PlateLoc by switching the power switch at the rear of the machine to the ON position. The LCD touch screen will turn on and display the Main Menu as shown in figure 7.

Figure 7: PlateLoc Main Menu



2) Press **Setup** on the Main Menu. This will take you to the Set Parameters Menu (see figure 8). To adjust the contrast of the LCD screen, press the up or down arrow next to the symbol of the sun.

Figure 8: PlateLoc Set Parameters Menu



3) Ensure that the temperature is set to 30 °C and time is set to 0.5 s. Use the up or down arrows next to the corresponding paramter to adjust the value.
4) Press **Done** to return to the Main Menu.

5) The PlateLoc may take a few minutes to reach the temperature setting. The **Status** display in the Main Menu will indicate whether the Machine is "Warming Up", "Cooling Down", or "Ready".

.

NOTE *The **RUN** button remains blank until the temperature reaches the required level.*

6) When the **RUN** button appears, press **RUN** to execute a cold cycle test of the PlateLoc.

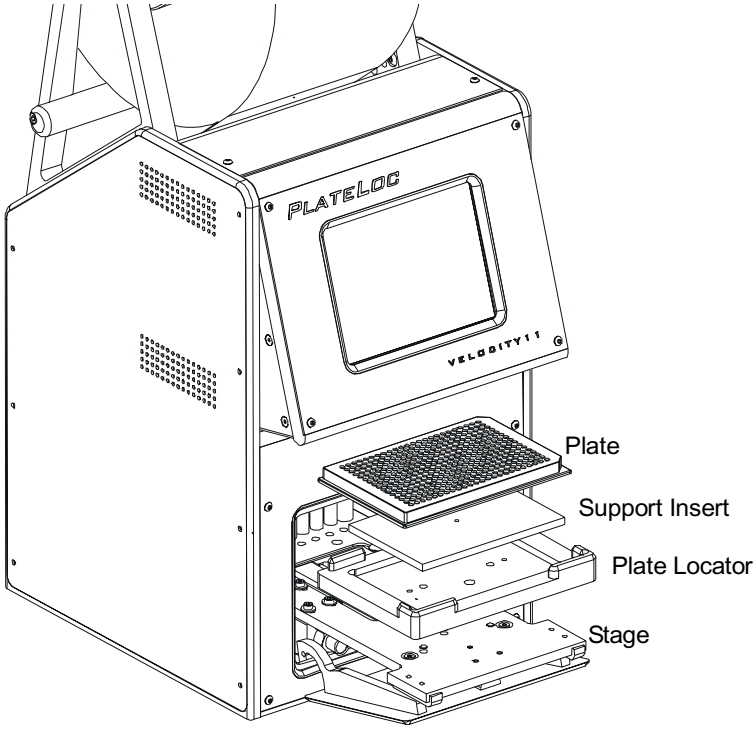
NOTE *Do not hold your finger on the **RUN** button. This button is also used to stop a cycle.*

7) The door will automatically close and you will hear air being released within the machine. The door will automatically open and shuttle the tray outward when the cycle is complete.
8) The *"No Plate in Holder"* error message will appear on the LCD indicating that no plate was found in the machine. Press **Clear** to return to the Main Menu.
9) Remove the cut piece of seal material from inside the machine.
10) Repeat the cycle four more times.

Chapter 3: Plate Sealing

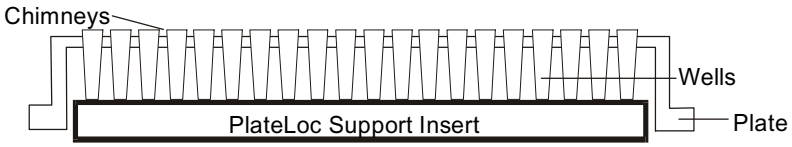
Selecting a Plate Locator Insert

Figure 9: Loading the Plate Locator and Insert



1) Place the plate locator onto the three pins of the stage.
2) Place the support insert that best fits your plate type into the plate locator.
   - If the underside of the wells are flush with the bottom rim of the plate, use the *180* insert.
   - If the underside of the wells are not flush with the bottom rim of the pate, use an insert which will support the underside of the wells and lift the bottom rim of the plate slightly above the plate locator surface (see figure 10).

Figure 10: Cross Section of Plate and Support Insert



NOTE

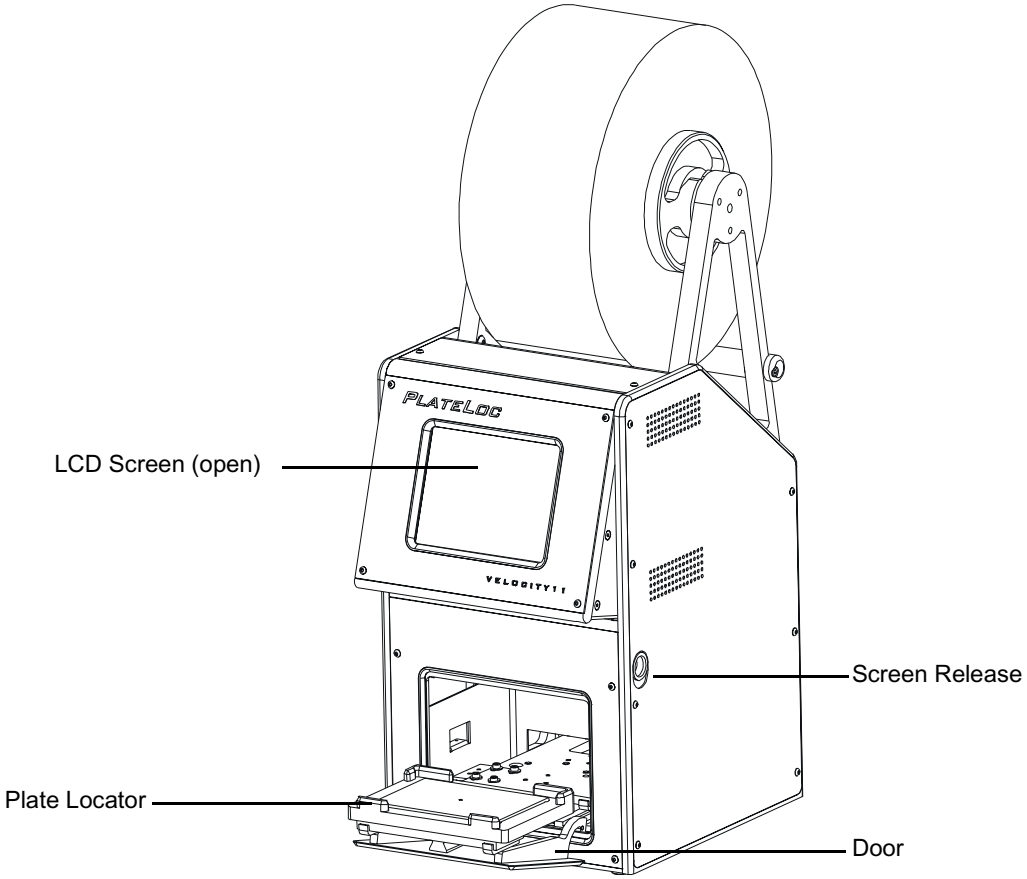
Always use the thinnest insert that will sufficiently support the wells.

Using the LCD Touch Screen

Use the LCD touch screen to control the PlateLoc manually.

1) Tilt the LCD screen for easier viewing.
   - Press down on the screen release on the right side of the machine (see figure 11).
   - Pull the bottom of the screen out. Allow the screen release to click into place when the screen reaches its open position.
   - To close, press down on the screen release and push the bottom of the screen. Allow the screen release to click into place when the screen reaches its closed position.

Figure 11: Manual Sealing Preparation



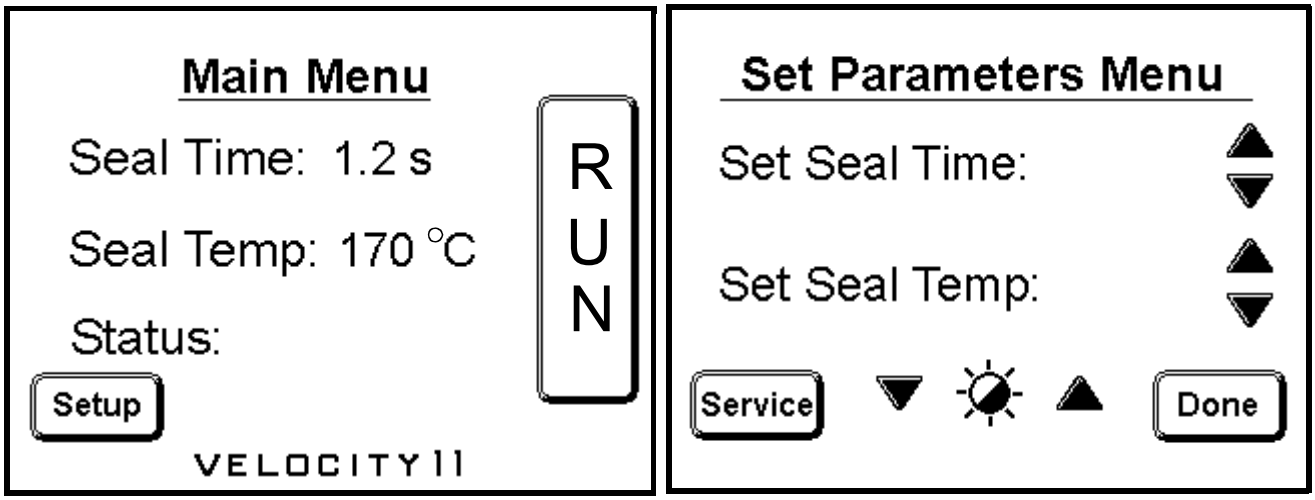
2) Turn on power to the machine by switching the power switch to ON. The Main Menu will automatically appear on the LCD touch screen (see figure 12).
3) Press the **Setup** buttton in the Main Menu to enter the Set Parameters menu (see figure 12).
4) The Set Parameters menu is used to set the sealing parameters as well as to adjust the screen contrast.
   - To adjust the contrast of the LCD screen, press the up or down arrow next to the symbol of the sun (see figure 12).
   - To adjust sealing parameters (seal time and seal temperature), press the up or down arrow on the screen next to the parameter you wish to adjust (see figure 12).
5) Press the **Done** button in the Set Parameters menu to return to the Main Menu (see figure 12).

Setting Seal Time and Temperature

1) Press the **Setup** button on the Main Menu. This will take you to the Set Parameters Menu (see figure 12).
2) There are two parameters to set: **Seal Time** and **Seal Temperature**. These parameters differ for the type of seal and plate being used (see table 2). To adjust the parameters, simply press the up or down arrow on the LCD touch screen next to the parameter you wish to adjust.
3) Press **Done** to return to the Main Menu.
4) The PlateLoc will take approximately 2.5 minutes to reach sealing temperature.

NOTE *The **RUN** button remains blank until the temperature reaches the required level.*

Figure 12: Menus



NOTE *The Service button is a password protected entrance into Velocity11's service system. The operator will not have access to the service system.*

Standard Seal Times and Temperatures

The PlateLoc is designed to be used with as many different plates and seal materials as possible. Each type of plate and each type of seal will require slightly different seal times and seal temperatures. The best way to determine settings for your PlateLoc setup is to experiment with various times and temperatures until you find settings that provide a consistently good seal for your plates.

Locate your plate material and seal material in table 2. Use the standard seal time and seal temperature provided as a starting point from which to determine the ideal temperature and time for your machine.

Table 2: Seal Times and Temperatures

Plate Type		Peelable Seal	Piercable Seal	Clear Seal
Polystyrene	*temp*	180 °C	180 °C	150 °C
	time	1.2 s	1.2 s	2.0 s
Polypropylene	*temp*	170 °C	170 °C	150 °C
	time	1.2 s	1.2 s	2.0 s

NOTE

When testing times and temperatures, it is recommended to hold the temperature constant and cycle through a few different seal times since the PlateLoc takes some time to warm up and cool down.

Check the Velocity11 web page for updates and further details on seal materials, seal temperatures, and seal times. To determine if your settings have produced a good seal, refer to"Checking Seal Quality" on page 21.

Manually Sealing a Microplate

1) Ensure that all of the setup procedures have been followed.
2) Ensure that the temperature and sealing time have been set satisfactorily.
3) Ensure that the seal you have chosen is applicable for your kind of microplate.
4) Place a microplate in the plate locator. It should fit easily.
5) When the Status reads Ready on the Main Menu of the LCD touch screen (see figure 12), press **RUN**.

NOTE

*Do not hold your finger on the **RUN** button. This button is also used to stop a cycle.*

6) The plate will be shuttled into the machine. The shuttle door will close automatically. You will hear compressed air being released and the pneumatic cylinders moving as the plate is processed.
7) The shuttle door will open, and the sealed plate will be shuttled out of the machine. Note that the seal on the plate will be warm to the touch.

WARNING **The inside of the PlateLoc remains hot for approximately one hour after being powered down.**

Checking Seal Quality

To determine if the plate has been properly sealed:

1) Manually seal a plate.
2) After the plate has been sealed, wait five seconds for the plate and seal to cool down.
3) Remove the plate from the locator and carefully peel off the seal material from the plate.
4) Inspect the underside of the removed seal material. A plate that has been properly sealed will leave unbroken impressions of each "chimney" on the underside of the seal material. If there are faint or broken impressions on the seal material, the plate may need to be sealed for a longer time or at a higher temperature.

Visually inspect the plate. If the top of the plate looks overly melted, the plate may need to be sealed for a shorter time or at a lower temperature.

Chapter 4: Active X Documentation

The PlateLoc is designed to allow easy integration into an automated system. An ActiveX control is provided that installs on your computer, simplifying the programming needed to control the PlateLoc from your system. This document provides information on how to use Velocity11's ActiveX control within your Visual Basic or Visual C++ application. Please note that this documentation is for ActiveX version 3.1, and that all example code assumes that the PlateLoc control is instantiated as PlateLoc1.

NOTE

For manual operation of the PlateLoc, please see "Manually Sealing a Microplate" on page 20.

Installing PlateLoc Software

1) Take the compact disc marked "PlateLoc ActiveX" from its case and insert it into the CD drive on your PC.

NOTE

For the highest performance from your PlateLoc, we recommend a Pentium 166 or better based PC running Windows NT 4.0, Service Pack 6 or Windows 2000

2) Double-click **Setup.exe**. The **InstallShield Wizard** will appear.
3) Click **Next**. The **Customer Information** screen will appear.
4) Enter your name, company name, and PlateLoc serial number in the appropriate fields.
5) Click **Next**. The **Choose Destination Location** screen will appear.
6) The installation program will install the program on your C: drive unless you otherwise specify a location. To specify a location, click **Browse** and choose the desired destination folder. Otherwise, click **Next** and skip to step 9.
7) When the folder has been specified, click **Next**. The **Select Program Folder** screen will appear.
8) Click **Next** if you want the specified folder. If not, select a new folder and then click **Next**.
9) The **Setup Status** Screen will appear. When **InstallShield Wizard Complete** appears, click **Finish**.
10) Follow the directions for your particular development environment for adding an ActiveX to your application.

The PlateLoc ActiveX has been installed in the folder you specified. You are now ready to run the PlateLoc ActiveX from your computer.

Properties

short DesiredTemperature

`DesiredTemperature` is the temperature (in Celsius) needed to seal a plate.

GetDesiredTemperature

Description: Retrieves the current temperature set point (in Celsius) saved in the PlateLoc. If an error occurs, `GetDesiredTemperature()` will return -1 and an error event will be fired.

Parameters: None

Returns: short

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim desiredtemp As Short`
`desiredtemp =`
`  PlateLoc1.DesiredTemperature`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`short iDesiredTemp;`
	`iDesiredTemp =`
	`  PlateLoc1.GetDesiredTemperature();`

SetDesiredTemperature

Description: Sets the temperature (in Celsius) used for a sealing cycle. Valid numbers are from 20 to 230, inclusive. If the user tries to set a temperature that is too low, the temperature is automatically set to 20 °C. Similarly, if the user tries to set a temperature that is too high, the temperature is automatically set to 230 °C. In either case, an error event is fired.

Parameters: short

Returns: None

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim temp As Short`
`temp = 196`
`PlateLoc1.DesiredTemperature = temp`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`short itemp;`
	`itemp = 196;`
	`PlateLoc1.SetDesiredTemperature(itemp);`

short CurrentTemperature

`CurrentTemperature` is the present temperature (in Celsius) of the hot plate.

GetCurrentTemperature

Description: Retrieves the current temperature (in Celsius) of the PlateLoc's hot plate. If an error occurs, `GetCurrentTemperature()` will return -1 and an error event will be fired.

Parameters: None

Returns: short

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim temp As Short`
`temp = PlateLoc1.CurrentTemperature`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`short iTemp;`
	`iTemp = PlateLoc1.GetCurrentTemperature();`

SetCurrentTemperature

Not implemented.

double SealingTime

`SealingTime` refers to the length of time needed to seal a microplate in seconds.

GetSealingTime

Description: Retrieves the current sealing time set in the PlateLoc's memory. If an error occurs, `GetSealingTime()` will return -1 and an error event will be fired.

Parameters: None

Returns: double

`Example:`

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim sealingtime As Double`
`sealingtime = PlateLoc1.SealingTime`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`double fSealingTime;`
	`fSealingTime = PlateLoc1.GetSealingTime();`

SetSealingTime

Description: Sets the amount of time that the hot plate contacts the sealing foil. Valid numbers are from 0.5 to 12.0 seconds, inclusive. If a sealing time less than 0.5 seconds is specified, the sealing time will automatically be set to 0.5 seconds and an error event will be fired. Similarly, if a sealing time greater than 12.0 seconds is specified, the sealing time will automatically be set to 12.0 seconds and an error event will be fired.

Parameters: double

Returns: None

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim sealingtime As Double`
`sealingtime = 2.3`
`PlateLoc1.SealingTime = sealingtime`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`double fSealingTime = 2.3;`
	`PlateLoc1.SetSealingTime(fSealingTime);`

short State

`State` contains information about the PlateLoc's current state of operation.

GetState

Description: Retrieves the PlateLoc state code. Refer to table 3 for a list of valid state codes.

Parameters: None

Returns: short

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim state As Short`
`state = PlateLoc1.State`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`short iState;`
	`iState = PlateLoc1.GetState();`

SetState

Not implemented

State Codes

Table 3: State Protocol Definitions

Status Code	Definition
0	Ready
1	Running
2	OutOfTemp
3	Error
4	Setup Screen
5	Password Screen
6	Service Screen (service use only)
7	AD Values Screen (service use only)
8	Actuation Screen (service use only)
10	Threshold Screen (service use only)
11	Timing Screen (service use only)
12	Return Actuators
13	Debounce
14	Waiting to Run
15	Config Screen (service use only)
16	Fatal Error
17	Temperature Screen (service use only)

short ErrorFlags

`ErrorFlags` contain information about the last error asserted by the PlateLoc. A summary of the error flags is given in table 4.

GetErrorFlags

Description: Retrieves the PlateLoc's error flags.

Parameters: None

Returns: short

Example:

Visual Basic	Visual C++

`PlateLoc1.Initialize 2`
`Dim iErrorFlags As Short`
`iErrorFlags = PlateLoc1.ErrorFlags`
	`PlateLoc1.Initialize(2);`
	`short iErrorFlags;`
	`iErrorFlags = PlateLoc1.GetErrorFlags();`

SetErrorFlags

Not implemented

Table 4: Flag Bit Protocol Definitions

Bit	Definition
Bit 0	Set— Cycle Finished Clear— Cycle Not Finished
Bit 1	Set—Fatal Error
Bit 2	Set— Non-Fatal Error
Bit 3	Set— Insufficient Air/Vacuum Error
Bit 4	Set— Sensor Error
Bit 5-8	Spare

VARIANT ErrorString

`ErrorString` contains a text explanation of the last error asserted by the PlateLoc. A summary of the error strings is given in table 5.

GetErrorString

Description: Retrieves the PlateLoc's error strings.

Parameters: None

Returns: VARIANT

Example:

Visual Basic	Visual C++

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim ErrorString As String`
`ErrorString = PlateLoc1.ErrorString`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`VARIANT vErrorString;`
	`vErrorString = PlateLoc1.GetErrorString();`
	`CString sStatus;`
	`sStatus = vErrorString.bstrVal;`

SetErrorString

Not implemented

Table 5: Error Strings

Error String	Flag Bits Set
Transfer Plate Vacuum Error	2,3
Keystone Error	2
Low Air Pressure Error	2,3
Gripper Plate Vacuum Error	2,3
Hot Plate Vacuum Error	2,3
Overheat Error	2
Cycle Stopped Manually	2
No Plate in Holder	2,4
Temperature Sensor Error	2,4
Memory Access Error	1
Actuator Timeout Error	2
Serial Communications Error	2
Door Open During Cycle	2,4
Insufficient Vacuum Pressure	2,3

long ProcessTimeout

ProcessTimeout represents the allowable length of a sealing cycle in mS. If the cycle exceeds this length, an error is asserted. The default timeout is 10000 ms (10 seconds).

GetProcessTimeout

Description: Returns the current timeout in ms.

Parameters: None

Returns: long

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`Dim iProcessTimeout As Long`
`iProcessTimeout =`
`  PlateLoc1.ProcessTimeout`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`long iProcessTimeout;`
	`iProcessTimeout =`
	`  PlateLoc1.GetProcessTimeout();`

SetProcessTimeout

Description: Sets a new process length in ms.

Parameters: long

Returns: None

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`PlateLoc1.ProcessTimeout = 10000`
`'Set the process timeout to 10 seconds`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`PlateLoc1.SetProcessTimeout(10000);`
	`//Set the process timeout to 10 seconds`

ControlPicture

Description: Retrieves a picture of the PlateLoc bitmap that can be used in the container's application.

Parameters: None

Returns: IPictureDisp

Example: In this example, we will paint the PlateLoc bitmap over a button.

Visual Basic	Visual C++

``' Assume that there is a button named
' Command1 on the current form. You
' must set the Style property of
' Command1 to "Graphical"
Command1.Picture =
   PlateLoc1.ControlPicture```
	``/* The CPicture class will be imported into
	   your project when the ActiveX is
	   installed */
	CButton button; // Create a button
	CPicture PlateLocPic;
	PlateLocPic = PlateLoc.GetControlPicture();
	  // Retrieve the picture
	button.SetBitmap((HBITMAP)
	   PlateLocPic.GetHandle());
	// Paint the bitmap onto the button```

Methods

Initialize

Description: Initializes the COM port that the PlateLoc is attached to. This method must be called before any other commands can be issued to the PlateLoc.

Parameters: short

Returns: None

Example:

Visual Basic	Visual C++
```PlateLoc1.Initialize 2 ' sets the COM port to COM2```	```PlateLoc1.Initialize(2); // sets the COM port to COM2```

ShowDiagsDialog

Description: Opens a dialog box that allows you to easily test the PlateLoc. From this dialog, you may set the sealing time, sealing temperature, read the PlateLoc status codes, and start a sealing cycle.

Parameters: None

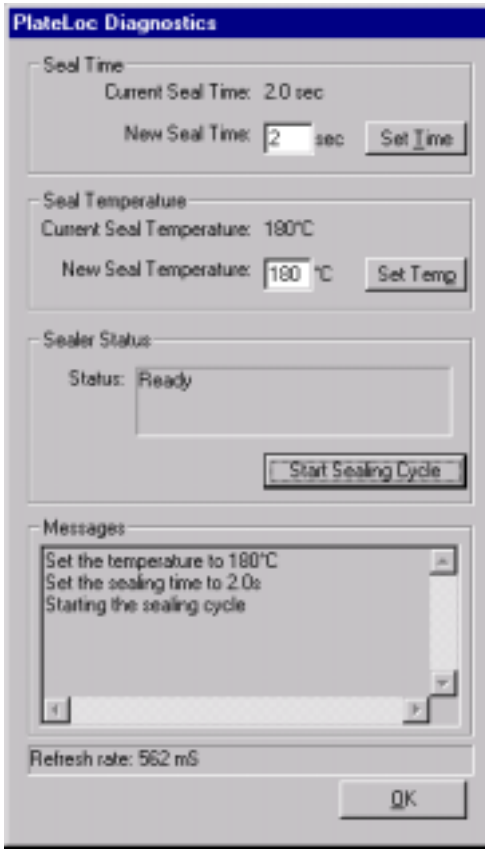
Returns: None

Example:

Visual Basic	Visual C++
```PlateLoc1.Initialize 2 ' sets the COM port to COM2 PlateLoc1.ShowDiagsDialog```	```PlateLoc1.Initialize(2); ' sets the COM port to COM2 PlateLoc1.ShowDiagsDialog();```

The following screen will appear when `ShowDiagsDialog` is called (see figure 13).

Figure 13: PlateLoc Diagnostics Screen



`Close`

Description: Closes serial port used by the PlateLoc ActiveX. After calling `Close`, the method `Initialize` must be called again before resuming communications with the PlateLoc.

Parameters: None

Returns: None

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`PlateLoc1.SealingTime = 2.3`
`PlateLoc1.Close`
`' Free up the serial port`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`PlateLoc1.SetSealingTime(2.3);`
	`PlateLoc1.Close();`
	`// Free up the serial port`

StartCycle

Description: Starts the PlateLoc sealing cycle.

Parameters: None

Returns: None

Example:

Visual Basic	**Visual C++**

`PlateLoc1.Initialize 2`
`' sets the COM port to COM2`
`PlateLoc1.StartCycle`
	`PlateLoc1.Initialize(2);`
	`// sets the COM port to COM2`
	`PlateLoc1.StartCycle();`

StopCycle

Description: Aborts the current cycle.

Parameters: None

Returns: None

Example:

Visual Basic	**Visual C++**

`Public Declare Sub Sleep Lib "kernel32" Alias "Sleep" (ByVal dwMilliseconds As Long)`
 	
`PlateLoc1.Initialize 2`
`'Set up on COM 2`
`PlateLoc1.StartCycle`
`'Start up a seal cycle`
`Sleep 1000`
`'Wait 1 second`
`PlateLoc1.StopCycle`
`'Kill cycle`
	`PlateLoc1.Initialize(2);//Set up on COM 2`
	`PlateLoc1.StartCycle();`
	`// Start up a seal cycle`
	`Sleep (1000); // Wait 1 second`
	`PlateLoc1.StopCycle(); //Kill cycle`

Events

Events are fired asynchronously by the ActiveX to notify the container that a procedure has finished or an error has occurred. Consult Microsoft's ActiveX documentation on how to handle events in your Visual C++ or Visual Basic code.

`CycleCompleted`

Description: This event fires whenever the sealing cycle has completed.

Parameters: None

`Error`

Description: This stock event fires whenever any fatal or non-fatal PlateLoc error has occurred. The SCODE parameter can be used by the container application to determine what kind of error occurred.

Parameters: (short Number, BSTR FAR* Description, SCODE Scode, LPCTSTR Source, LPCTSTR HelpFile, long HelpContext, BOOL FAR* CancelDisplay)

Table 6: SCodes

Description	SCode
Communication port failed to open	32767
Time is invalid	32766
Temperature is invalid	32765
Could not create status thread	32764
Could not create temperature thread	32763
Communication port is not open	32762
Waiting for status	32761
Waiting for temperature	32760
Could not create cycle thread	32759
Cycle error	32758
No dialog thread	32757
Waiting for current sealing time	32756
Waiting for desired temperature	32755
Cycle never started	32754
No response to cycle start command	32753
Cycle start command not acknowledged	32752
No response to `Settime` command	32751

Table 6: SCodes

Description	SCode
`Settime` not acknowledged	32750
Error with `Settime` command	32749
No response to `Settime` command	32748
`Settemp` command not acknowledged	32747
Error with `Settemp` command	32746
No response to `Clearerror` command	32745
`Clearerror` command was not acknowledged	32744
Error with `Clearerror` command	32743
Cycle did not finish	32742
Non runtime error	32741
No response	32740
Error with `Abortcycle` command	32739
`Abortcycle` command not acknowledged	32738
No response to `Abortcycle` command	32737

Chapter 5: Maintenance

The PlateLoc needs little regular maintenance to keep it running smoothly. All repairs within the first year will be covered under Velocity11's initial one-year warranty. See Appendix B, "Velocity11's Product Warranty" on page 51. After the first year, your warranty can be extended through one of Velocity11's service plans. See "Warranty Information and Service Contracts" on page 6 for information regarding service plans.

General Maintenance Schedule

Use the following table to determine the maintenance needs of your PlateLoc based on observed symptoms and the approximate schedule. After determining your maintenance need, follow the steps below to properly clean your machine. The maintenance schedule is approximated for expected "regular" use of the PlateLoc (up to 150 plates/day). Heavier use may require more frequent maintenance.

Table 7: PlateLoc Maintenance Schedule

Maintenance Need	Time Schedule	Symptoms
Clean the Hot Plate	Inspect once a week.	• Hot Plate Vacuum Error • Plate sticks to the hot plate after sealing
Change the Seal Roll	--	• Empty seal roll
Overall Machine Cleaning	Once a month	• Dust and grime on machine exterior and interior
Change the NAFD2000 Filter	Varies	• Insufficient Air Pressure Error • Saturated Filter
Inspect the Cutter	Once a month	• The seal material lacks a clean edge or does not cut
Lubricate Door Hinges	Once every six months	• Door squeaks or moves slowly • Door does not close completely

WARNING **To avoid electrical shock and possible severe injury, do not remove PlateLoc covers.**

Cleaning the Hot Plate

WARNING **The hot plate remains EXTREMELY HOT during cleaning. Use a THICK rag when cleaning to keep exposed skin safely away from the hot plate.**

1) Remove the plate from the stage. Do not turn off the machine. The hot plate is easier to clean when kept hot.
2) The hot plate is located on the roof of the main sealing chamber. Using a thick, clean, dry rag, reach into the front opening of the PlateLoc and carefully wipe off built up residue from the hot plate.

CAUTION **DO NOT use any type of metal object to clean the hot plate. Doing so will damage the hot plate and adversely affect the seal quality.**

Changing the Seal Roll

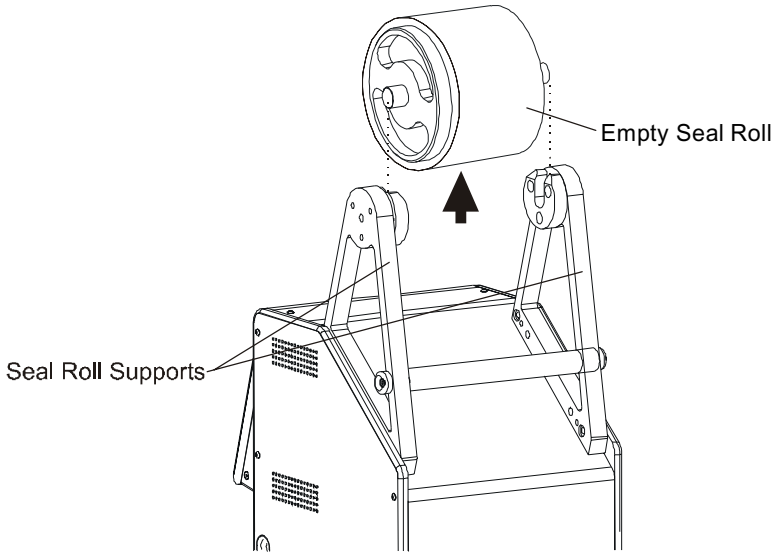
The seal roll only needs to be replaced when a roll empties. To replace a seal roll, follow the steps for removing the seal roll listed below. After removing the empty seal roll, it is recommended to let the machine cool down to 30° C before following the procedures outlined in “Mounting the Seal Roll” on page 11 and “Loading the Seal” on page 12.

Sometimes it is necessary to reload seal material without cooling down the machine. This may occurr if the PlateLoc displays an error and instructs you to reload the seal material. The need also arises if the seal roll empties in the middle of an automated process. To reload seal material without cooling down the machine, refer to “Reloading Seal Material into a Hot Machine” on page 39.

Removing an Empty Seal Roll

1) Detach any leftover seal material from the existing seal roll.
2) Remove the seal roll and hubs from the seal roll supports (see figure 14).

Figure 14: Removing the Empty Seal Roll



3) Unscrew one hub from the axle and remove the empty seal roll.
4) To remove the leftover seal material, open the seal gripper by pressing down on the lower seal gripper. Pull out the left-over seal material from the back of the machine.

WARNING **The Hot Plate is still EXTREMELY HOT! Do not insert hands through the front door of the machine.**

Reloading Seal Material into a Hot Machine

WARNING **The following procedure describes how to change the seal roll while the Hot Plate is still hot. Follow this procedure only when necessary. Use extreme caution when interacting with a hot PlateLoc.**

1) Place the new seal roll onto the axle. The roll should fit snugly against the seal hub.
2) Screw the second hub back onto the axle. Tighten until the hubs are securely holding the roll.
3) Using scissors, make a clean straight cut across the end of the seal material, cutting off any part of the seal that is wrinkled or torn. The PlateLoc will not work with wrinkled seal.

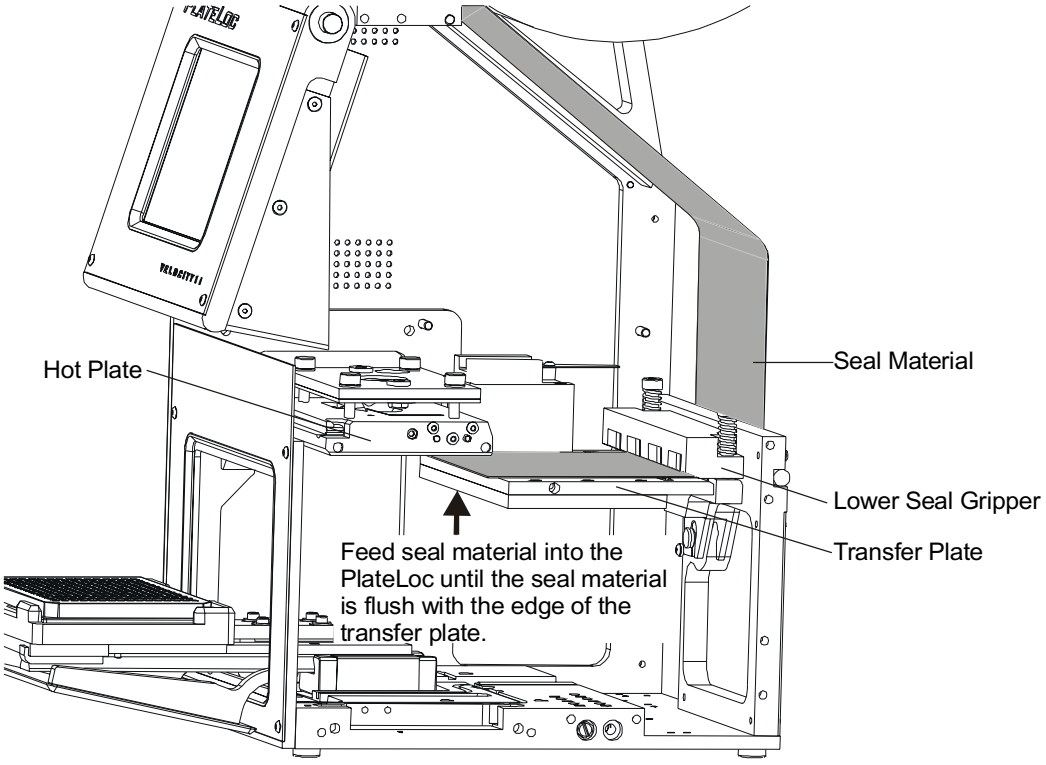
4) Place the seal roll with hubs and axle onto the seal roll supports. The roll should be placed so that the seal feeds from the underside of the seal roll, as opposed to feeding from the top of the roll. The roll should fit easily into the two seal roll supports.
5) Feed the seal from the front of the roll toward the back along the top of the machine and down the back. Be sure to feed the seal under the bar connecting the roll supports.
6) Feed the material into the seal roll slot directly above the lower seal gripper.

NOTE *If you have problems loading the seal, ensure that the edge entering the machine has not curled down. Curl the edge up by hand to remove any downward curl.*

7) Figure 15 shows the path that the seal material takes through the machine. Look into the front opening of the machine. You should see the seal material emerging from on top of the seal transfer plates (see figure 15).

WARNING **The surface above the main chamber is extremely hot. Do not insert hand into the door of the machine. Adjust the position of the seal by moving it at the back of the machine.**

Figure 15: Feeding Seal Material into a Hot PlateLoc



8) Feed the seal until you see the front edge of the seal material is flush with the front edge of the seal transfer plate. Do not insert the seal too far or it will stick to the hot plate. Ensure that the seal is centered.
9) Close the seal gripper by pushing the silver gripper release button under the gripper.
10) Roll any slack back up into the seal roll. Be careful not to move the seal from the correct position.

11) Run at least two manual cycles using an empty plate to ensure that the seal material is feeding correctly.

Overall Machine Cleaning

1) Set the temperature to 30 °C and wait for the machine to cool down.

NOTE *The PlateLoc takes approximately one hour to cool down from its sealing temperature.*

WARNING **Ensure that the machine is cool before reaching inside to clean it. Reaching inside the PlateLoc while it is still warm is extremely dangerous.**

2) Turn off power to the machine.
3) Remove any scraps of seal material lying in the main sealing chamber.
4) Using a clean, dry cloth, remove any dirt or residue from the inside of the machine.
5) Using a clean, dry cloth, wipe down the machine exterior and the area surrounding the machine. It is also safe to use alcohol or standard glass/tile cleaner to clean the machine.
6) Turn power back on to the machine and reset the machine to its sealing temperature.

Changing the NAFD2000 Filter

The frequency with which the NAFD2000 filter needs to be changed depends on the particular air supply setup and overall PlateLoc usage. An **Insufficient Air Pressure Error** is the initial signal that the filter may need to be changed. Upon receiving an **Insufficient Air Pressure Error**, check the following conditions to determine if your filter needs to be changed:

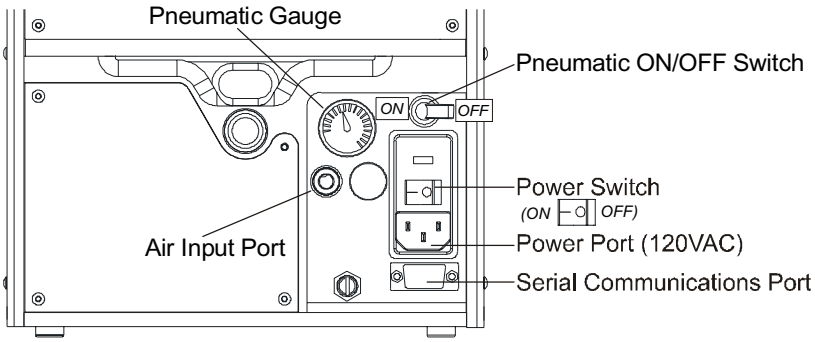
- The PlateLoc gives an **Insufficient Air Pressure Error** when trying to run.
- The pressure gauge on the rear of the PlateLoc reads less than 90 psi.
- The pressure gauge at the air compressor reads 90 psi or greater.

If all the above conditions are met, the NAFD2000 filter may need to be changed. To verify that the problem is a dirty filter, remove the filter from the air line running to the PlateLoc. If the pressure on the back of the PlateLoc reads correctly, the filter needs to be replaced. If the pressure still reads incorrectly, call the Velocity11 Service Center.

The following steps describe how to change the NAFD2000 filter:

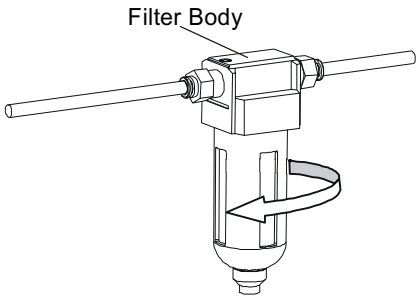
1) Turn off the PlateLoc.
2) Switch the pneumatic ON/OFF switch on the rear of the PlateLoc to the OFF position (toward the outside of the machine, see figure 16).

Figure 16: PlateLoc Control Panel



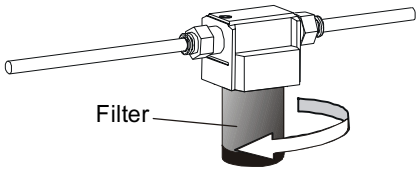
3) Turn off the air supply and bleed off any excess air remaining in the line between the air compressor and the PlateLoc.
4) Hold the filter body and unscrew the filter bowl (see figure 17).

Figure 17: Unscrewing the NAFD2000 Filter Bowl



5) Check if the filter is saturated. A saturated filter is the final indication that the filter needs to be replaced.
6) Unscrew the dirty filter from the filter body and replace it with a new one (see figure 18).

Figure 18: Unscrewing the NAFD2000 Dirty Filter



7) Screw the filter bowl back on the filter body.
8) Turn on the air supply and ensure that it reads the proper pressure.
9) Switch the pneumatic ON/OFF swtich on the back of the PlateLoc to the ON position. Ensure that the pressure gauge on the back of the machine reads about 90 psi.

WARNING **When you turn on the air supply to the PlateLoc, the door will open and the stage will extend. Keep the area in front of the PlateLoc clear.**

Inspecting the Cutter

1) Set the temperature to 30 °C and wait for the machine to cool down.

NOTE *The PlateLoc takes approximately one hour to cool down from its sealing temperature.*

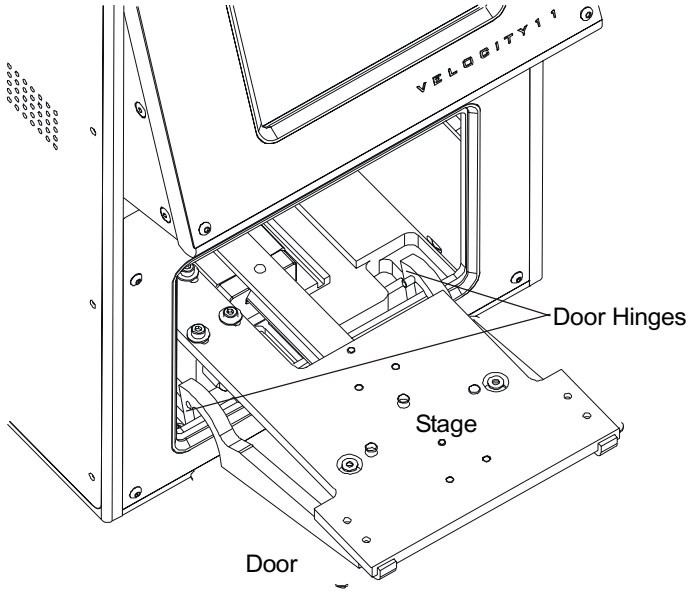
WARNING **Ensure that the machine is cool before reaching inside to clean it. Reaching inside the PlateLoc while it is still warm is extremely dangerous.**

2) Run the machine without a plate and with the temperature set to 30 °C.
3) Remove the piece of seal material and ensure that it has a nice, clean edge.
4) Repeat the process three or four times.
5) If you repeatedly notice the seal material has a frayed or poorly cut edge, the cutter on your PlateLoc may have dulled or may have shifted to an incorrect position. Please contact Velocity 11's Service Center at (650) 846-6500.

Lubricating the Door Hinges

1) Turn off power to the machine.
2) Switch the pneumatic ON/OFF switch on the back of the machine to OFF (toward the outside of the machine).
3) Remove the plate, plate support insert, and plate locator from the stage.
4) With the stage extended, carefully apply one drop of a standard lubricant (Tri-Flow, 3-in-1) to the side of the door hinges located just on the inside of the main chamber (see figure 19). Be sure to apply the lubricant to the side of the door hinge and allow the lubricant to run down into the door hinge axle (the rod and spring connecting the two door hinges).

Figure 19: Lubricating the Door Hinges



5) Open and close the door repeatedly by hand to help spread the lubricant.
6) Wipe off excess lubricant from the machine interior.

Chapter 6: Troubleshooting

The following troubleshooting guide offers a series of steps to follow to correct problems with your PlateLoc as quickly as possible. If problems persist or if you have any questions regarding the troubleshooting procedure, please contact the Velocity11 Service Center.

WARNING **To avoid electrical shock and possible severe injury, do not remove PlateLoc covers. Refer servicing to qualified Velocity11 personnel only.**

The Velocity11 Service Center is always available to assist you with any of your PlateLoc needs. Please feel free to contact the Velocity11 Service Center at any point in the troubleshooting process. For information regarding your PlateLoc service plans, consult "Velocity11's Product Warranty" on page 51.

NOTE *Velocity11's Service Center can be reached at (650) 846-6500.*

Power and LCD Touch Screen Problems

The PlateLoc does not turn on.

- Check the power cable on the back of the machine to ensure that both ends are plugged in correctly.
- Check the power switch to ensure it is switched to the ON position (toward the inside of the machine).
- Looking through the front door of the machine, check if there is a red light turned on within the main chamber of the machine.
    - If the red light is on, there is a problem with the LCD screen. Refer to the next section on checking the LCD screen.
    - If the red light is NOT on, there is a problem with the PlateLoc's power supply.

The LCD Screen does not turn on or does not respond to touches.

- The Touch Screen may have been disconnected or damaged on the inside of the machine. Call the Velocity11 Service Center.

The LCD Touch Screen is dim or difficult to read.

- The contrast may need adjustment. To adjust the contrast of the LCD screen:
    1) From the Main Menu, press Setup to enter the Set Parameters Menu.
    2) Use the up and down arrows next to the picture of the sun to adjust the contrast of the LCD Screen.
- If the screen remains dim or difficult to read, the screen needs internal repair.

Air Problems

"Insufficient Air Pressure" Error Message on LCD screen.

- Check the pneumatic ON/OFF switch on the rear of the PlateLoc. Ensure that it is in the ON position (towards the inside of the machine).
- Check the air pressure gauge on the rear of the PlateLoc. It should read approximately 90 psi.
  - If it reads above 80 psi and the error message persists, there is a problem with the PlateLoc's air pressure sensor. Contact the Velocity11 Service Center.
- Check the air supply. Ensure that it is turned on and supplying enough pressure.
- Inspect the NAFD2000 air filter to see if it needs replacement. For instructions on removing and changing the NAFD2000 air filter refer to "Changing the NAFD2000 Filter" on page 41.
- If the problem persists, the pressure regulator within the PlateLoc may have a problem.

Sealing Problems

The plate sticks to the hot plate.

- There may be residue on the hot plate. Refer to "Cleaning the Hot Plate" on page 38.

The seal material does not cut.

- The cutter blade may need to be sharpened or adjusted. Refer to "Inspecting the Cutter" on page 43 to determine the problem with the cutter.

The seal edge is tattered or cut unevenly.

- The cutter blade may need to be sharpened or readjusted. Refer to "Inspecting the Cutter" on page 47 to determine the problem with the cutter.

The plate does not seal completely or seals unevenly.

- Check that you are using the correct support insert. See "Selecting a Plate Locator Insert" on page 17 to determine the proper insert for your plate.
- Refer to the standard seal times and temperatures listed in Table 2 and ensure your setup corresponds to the table.
- In the Set Parameters menu, increase the seal time. Different plates demand different seal times and temperatures than those suggested by the seal manufacturer.
- Inspect the top surface of the plate to ensure it is flat. Warped or crooked plates may seal poorly.
- If the plate continues to seal poorly, examine the plate carefully. Velocity11's PlateLoc is specifically designed to seal microplates whose well edges, "chimneys", are raised above the surface of the plate. Plates with chimneys lower than the surface of the plate may not seal well or may require a longer seal time and higher temperature.

Seal Material Feeding Problems

Seal material is difficult to remove from the machine.

- Turn the power off. The transfer plates will automatically release the seal material.
- If the seal material is still difficult to remove, the seal may be stuck inside the PlateLoc.
- Turn the pneumatic ON/OFF switch to the OFF position (towards the outside of the machine). This will release the internal mechanisms from their fixed positions.
    - If the seal material is NOT piercable seal, try to pull the seal material out using significant force if necessary.
    - If using piercable seal, try to pull the seal material out being careful not to tear the seal.
- If the seal material remains stuck or tears, contact the Velocity11 Service Center to have it removed internally.

Seal material does not feed straight.

- Check that the seal roll hubs are screwed tightly against the seal roll.
- Check that the seal roll sits straight and is seated fully within the seal roll supports.
- Check that the seal material is being fed underneath the bar connecting the two seal roll supports.
- Check that the seal gripper is closed by pressing the silver gripper release button.
- If the seal feeding does not improve after 10 to 20 cycles, check the cutter blade. Refer to “Inspecting the Cutter” on page 43.

Seal roll does not spin easily in roll supports.

- Check that the seal roll hubs are screwed tightly against the seal roll.
- Check that the seal roll sits straight within the seal roll supports.
- If the problem persists, the seal roll may be damaged. If a spare seal roll is available, check to see if the same problem exists with the spare roll.

Seal material does not feed into the seal roll slot.

- Check that the pneumatic ON/OFF switch on the PlateLoc is switched to the ON position (towards the inside of the machine).
- Check that the seal gripper is lowered by pressing the silver gripper release button and then pushing down on the lower seal gripper until it clicks.
- Turn the power off and on again. The machine powers on ready to accept seal material.
- Check that the front edge of the seal material has not curled down or wrinkled. Cut off any curled or wrinkled seal and try to reinsert the material into the seal roll slot.
- Look through the seal roll slot from the rear of the machine. You should be able to see through to the front opening of the machine. If the view is obstructed, there may be scraps of seal material obstructing the seal material path.

PlateLoc Error Messages

Hot Plate Vacuum Error

The hot plate did not detect that a full piece of seal material was ready to be applied to the plate.

- Look inside the machine to see if there is a scrap of seal material. If there is a scrap of material in the machine, remove it.
- Try running the PlateLoc with a spare plate to see if the cycle completes successfully.
    - If the cycle completes successfully, continue with normal use of the PlateLoc.
    - If the same error repeats multiple times, there may be a problem with the hot plate vacuum system.
    - If a new error appears, find the error in the list of PlateLoc error messages listed on the following pages.

Transfer Plate Vacuum Error

The transfer plate did not detect the seal material in a correct position for feeding.

- Remove the seal from the rear of the machine. If the material is difficult to remove, refer to “Seal Material Feeding Problems” on page 47.
- Cut off any tattered edges and reload the seal material into the machine. Refer to “Reloading Seal Material into a Hot Machine” on page 39.
- Try running the PlateLoc with a spare plate to see if the cycle completes successfully.
    - If the cycle completes successfully, continue with normal use of the PlateLoc.
    - If the same error repeats multiple times, there may be a problem with the transfer plate vacuum system.

Actuator Timeout Error

The transfer plate did not complete one of its movements in the allotted time.

- Check if the seal roll spins with only moderate resistance in the roll supports. Refer to “Seal Material Feeding Problems” on page 47.
- Check if there is a cut piece of seal material inside the machine.
    - If there is a scrap, the transfer plate was obstructed from returning to its home position in the rear of the machine. Remove the scrap piece of seal material.
    - If there is no scrap, the transfer plate was obstructed from reaching its transfer position at the front of the machine.
- Remove the seal from the rear of the machine. If the material is difficult to remove, refer to “Seal Material Feeding Problems” on page 47.
- Cut off any tattered edges and reload the seal material into the machine. Refer to “Reloading Seal Material into a Hot Machine” on page 39.
- Try running the PlateLoc with a spare plate to see if the cycle completes successfully.
    - If the cycle completes successfully, continue with normal use of the PlateLoc.
    - If the same error repeats multiple times, there may be a problem with the seal material feed mechanism.

Cycle Stopped Manually Warning

The user aborted the sealing cycle by pressing the **Stop** button.

- Try running the PlateLoc with a spare plate to see if the cycle completes successfully.
    - If the cycle completes successfully, continue with normal use of the PlateLoc.
    - If a new error appears, find the error in the list of PlateLoc error messages.

Door Close Error

The door was not closed for the entire seal cycle.

- Turn the pneumatic ON/OFF switch on the back of the machine to the OFF position (towards the outside of the machine).
- Push the stage into the machine while holding the door open.
- Gently open and close the door to ensure nothing is blocking the door or the door hinges.
    - If there is nothing obstructing the door but it will not close fully, call the Velocity11 Service Center.
    - If the door closes fully and the error message persists, the door sensor may be malfunctioning.

NOTE

If the door closes fully, turn the pneumatic ON/OFF switch to the ON position and the PlateLoc stage will push the door open.

No Plate in Holder Error

- Check that the plate was positioned properly in the plate locator.
- Run the PlateLoc again. If the error repeats, there may be a problem with the plate sensor.

Temperature Sensor Deviation Error

The PlateLoc encountered a problem reading the temperature of the hot plate. The heaters automatically turned off and the machine will start to cool down.

- Restart the PlateLoc.
- If the error persists, call the Velocity11 Service Center.

Overheat Error

The PlateLoc's temperature control system has malfunctioned.

- Monitor the temperature of the machine displayed on the LCD screen. If the temperature continues to rise, power down the machine and unplug the machine from the outlet.
- Contact the Velocity11 Service Center.

Keystone Error or Memory Access Error

PlateLoc encountered problems accessing system memory.

- The PlateLoc memory may have been corrupted. Call the Velocity11 Service Center to verify that the PlateLoc settings are still correct.

Serial Communications Error

The serial communications input buffer has been overloaded.

- Ensure that the serial command input is correct.
- If the error persists, contact the Velocity11 Service Center.

Appendix A

Velocity11's Product Warranty

Velocity11, a California corporation with its principal place of business at 435 Acacia St., Palo Alto, California 94306 ("Velocity11") is the obligor of this service contract ("Contract").

This Contract sets forth the terms and conditions under which Velocity11 will provide Support Services (as defined below) for its Products covered under the Product Warranty guidelines.

1. DEFINITIONS

1.1 Support Services" means the support and/or services that are available from Velocity11, as further described in Exhibit A, may be amended from time to time.

2. COVERAGE

Velocity11 will provide the Support Services set forth in Exhibit A and pursuant to the terms and conditions of this Contract for one year after the purchase date of the product.

Additionally, the Customer has the option to purchase an enhanced "Platinum" Support Services contract. Terms, conditions and rates of enhanced coverage are set forth in Exhibit B of this Contract.

Within 30 days prior to the expiration date of the Product Warranty or Support Services contract, Velocity11 will offer the Customer the option of purchasing additional coverage based on the current Support Services rates at that time.

3. SUPPORT SERVICES

3.1 In order for Customer to receive the Support Services described in Exhibit A, Customer must:

(a) Initiate a service request by contacting Velocity 11 at (650) 846-6500.

(b) Provide the serial number of the Product, a description of the problem and the current version of the control software.

(c) Provide a detailed description of the type of error, a description the specific error message and when it occurs, the activity or use of the Product when the error occurred and remedial measures taken by the Customer to correct the error.

(d) Follow procedures and recommendations provided by the Velocity11 technician in an effort to correct problems via telephone. (VELOCITY11 WILL NOT DISPATCH A SERVICE TECHNICIAN TO PERFORM ON-SITE REPAIRS UNTIL THE TELEPHONE-BASED TROUBLESHOOTING PROCESS HAS BEEN EXHAUSTED)

(e) Subject to Customer's applicable security requirements, provide Velocity11 with access to and use of all information and Product facilities, including working space, electricity and a local telephone line, necessary for Velocity11 to provide timely Support Services pursuant to this Contract.

(f) To the best of its abilities, read, comprehend and follow operating instructions and procedures as specified in, but not limited to, Velocity11 documentation and other correspondence related to the products.

3.2 Velocity11 shall have no obligation to support:

(a) altered or damaged Products;

(b) any version of the Products other than the current version of the product, unless otherwise covered under an existing service contract or agreement;

(c) any Product with software that has been modified or is out-of -date, without the written approval and authorization of Velocity11;

(d) Product problems caused by Customer's negligence; Customer abuse or misapplication, including but not limited to use of incorrect voltages, use of incorrect fuses, use of incompatible devices or accessories and improper or insufficient ventilation; use of Product other than as specified in the user manual; or other causes beyond the reasonable control of Velocity11, including but not limited to an act of God such as lightning, floods, tornado or earthquake;

(e) Products installed on any hardware, operating Product version or network environment that is not supported by Velocity11;

(f) Products sold or transferred by the Customer to another entity.

4. FEE SCHEDULE

Customer shall pay the annual fees for Support Services for the initial term of this Contract within thirty (30) days of the Effective Date. Thereafter, (unless Support Services are not renewed) Customer shall pay annual Support Services within 30 days of the commencement of the then-current term for such Support Services.

5. TERM AND TERMINATION

5.1 The initial term of this Contract is one (1) year from the Effective Date of this Contract unless earlier terminated in accordance with this Contract. The Customer will be notified within thirty (30) days prior to the expiration date of the Product Warranty or Support Services contract and will have the option of purchasing additional coverage based on the current Support Services rates at that time.

5.2 Velocity11 may suspend or terminate Support Services if Customer fails to timely pay Support Service fees as provided in this Contract. Velocity11 may also terminate Support Services if Customer breaches any provision of this Contract and such breach is not remedied within thirty (30) days after Customer receives written notice of the breach. Velocity11 shall also have the right not to renew this Contract with respect to any Product by providing written notice of such election at least ninety (90) days prior to the termination of Support Services for such Product, provided that Velocity11 no longer generally provides Support Services for such Licensed Product, or no longer provides the specific Support Services previously offered.

5.3 Customer may terminate this Contract if Velocity11 materially breaches its obligations under this Contract. If Customer terminates this Contract due to a material breach on the part of Velocity11, Velocity11 will refund the support fees for the then current term paid by Customer under the Contract, from the date of termination prorated to the end of the then current term.

6. REINSTATEMENT OR RENEWAL OF SUPPORT SERVICES

In the event Customer fails to timely renew Support Services under this Contract, Support Services shall be discontinued at the end of the then-current term. If Support Services are terminated for any reason, at Velocity11's sole option, Customer may be permitted to reinstate or renew Support Services by paying Velocity11 applicable Support Services fees.

7. LIMITED WARRANTY

Velocity11 warrants that Support Services will be performed with the same degree of skill and professionalism as is demonstrated by like professionals performing services of a similar nature.

8. LIMITATION OF LIABILITY

8.1 Direct Damages. VELOCITY11'S SOLE LIABILITY AND CUSTOMER'S EXCLUSIVE REMEDY FOR DAMAGES WITH RESPECT TO THE SUPPORT SERVICES UNDER ANY CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHER THEORY, SHALL BE LIMITED TO THE AMOUNT PAID BY CUSTOMER FOR THE SUPPORT SERVICES.

8.2 Consequential Damages. UNDER NO CIRCUMSTANCES, INCLUDING NEGLIGENCE, SHALL VELOCITY11 BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOST PROFITS, LOSS OF DATA, OR COSTS OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, ARISING IN ANY WAY OUT OF THIS CONTRACT OR THE USE OF THE LICENSED PRODUCT, DESIGN TECHNIQUES AND DOCUMENTATION.

9. ENTIRE CONTRACT

This Contract and the attached Exhibit constitute the entire Contract between the parties regarding Support Services and supersede all previous Contracts or representations, oral or written, regarding the subject matter. This Contract may not be modified or amended except in a writing signed by a duly authorized representative of each party. Both parties acknowledge having read the terms and conditions set forth in this Contract and Exhibits attached hereto, understand all terms and conditions, and agree to be bound thereby.

EXHIBIT A

SUPPORT SERVICES
VELOCITY11'S STANDARD WARRANTY

The Standard Warranty, effective for one full year upon purchase date, covers all parts and labor costs necessary to repair your covered product due to all functional part failures as reasonably considered under this contract. If the technician cannot correct the Product problem over the telephone at the initiation of a service request, then the technician will follow the procedures outlined for the Support Services, described in this Agreement.

Non-shippable Products: a service technician will be dispatched the next business day, excluding holidays, to repair the Product(s). Regular holidays shall include New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving, and Christmas Day, unless Velocity11 determines otherwise and notifies Customer with 30-day advance notice.

Shippable Products: Product(s) must be shipped directly to Velocity11 to be repaired.

On-Site Service. On-site service is available for Customer Products within the United States. The technician will need to have the full address of Customer Products' location. A service technician will be dispatched to Customer's location to service Customer's Product. The Services provided under this Agreement are repair services that are necessary because of any defect that exists or occurs in materials or workmanship in the Products or in any Product component covered by this Agreement. The Standard Warranty does **not** include preventive maintenance, installation, deinstallation, relocation services or operating supplies. If Customer or Customer's authorized representative are not at the location when the service technician arrives, Velocity11 will no longer be obligated to provide services under this Agreement for the Product that requires service on such visit. The service technician will leave a notice with the time of arrival as proof of arrival. Consequently, you may be charged an additional fee for a second service call to repair your instruments.

Service Area. This Agreement applies only to Products located in the United States. In addition, Velocity11 may invoice Customer an additional charge for service in certain remote areas of the United States. Velocity11 will notify Customer if Customer Products are in an area where Velocity11 cannot offer on-site service. If Customer relocates its Product(s) to a geographic location in which the Standard Warranty service is not available, Customer may incur an additional charge to maintain the same categories of service coverage at the new location. If Customer chooses not to pay such additional charge, Customer service may be automatically changed to categories of service that are available in such new location with no refund available.

For purposes of the Gold Service, all references to time will mean the Customer's local time. References to the United States include the continental United States, Alaska, Hawaii and Puerto Rico.

Whole Unit Replacement. If the telephone technician determines that the defective unit is one that is easily disconnected and reconnected, or if the technician determines that Customer Product is one that should be replaced as a whole unit, Velocity11 reserves the right to request that the defective unit be shipped to Velocity11 for repairs. Under the Standard Warranty, Velocity11 will repair the unit, and ship it back to Customer.

Parts Ownership. All service parts removed from Customer Product(s) become Velocity11 property. Customer must pay the current retail price(s) for any service parts removed from Customer Product(s) and retained by Customer.

EXHIBIT B

OPTIONAL SUPPORT SERVICES

Platinum Service Plan

The Platinum Service Plan is available to each customer at an additional cost.

Under the Platinum Service Plan the Customer is guaranteed a four-hour response time for all repair service calls. When required, a Service Technician will be dispatched the same day the request was initiated, 365 days of the years.

For shippable items, Velocity11 will ship out a replacement product within twenty-four hours. The Customer will be responsible for shipping the damaged product back to Velocity11 in three working days after receiving the replacement product from Velocity11.

The Customer may upgrade to this plan during the first year of service. Please contact your Velocity11 representative for more details.

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