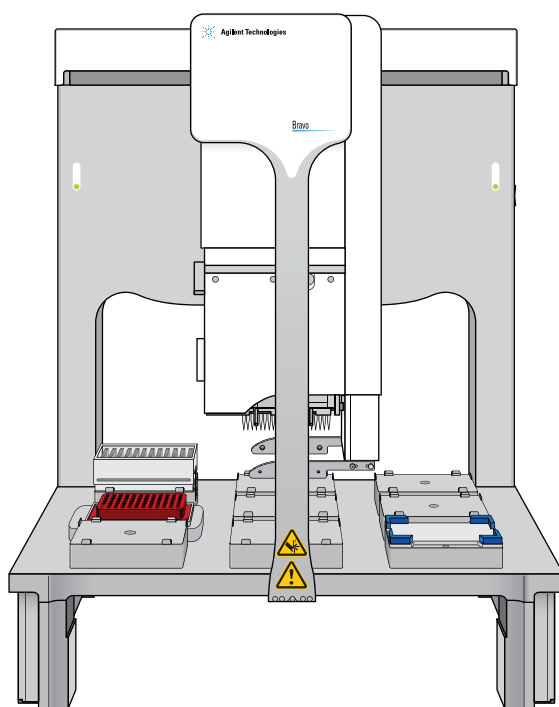


AssayMAP Bravo Platform

Error Recovery Guide



This guide contains the following topics:

- ["About this guide" on page 2](#)
- ["Reporting problems" on page 3](#)
- ["Common error messages" on page 4](#)
- ["Miscellaneous error messages" on page 16](#)

About this guide

Overview

This guide describes errors that you may encounter when using the Protein Sample Prep Workbench on the AssayMAP Bravo Platform.

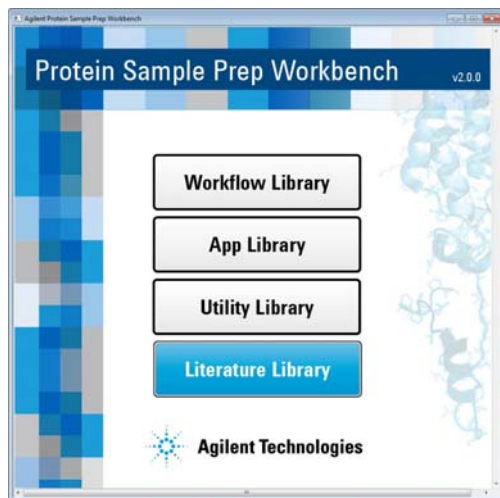
Software version

This guide documents the following or later versions:

- VWorks Automation Control 13.1.1
- Bravo Diagnostics 19.1
- Protein Sample Prep Workbench 3.0

Related information

You can find the user guides for the AssayMAP applications and utilities in the Literature Library in the Protein Sample Prep Workbench.



You can also access the user guides online in the VWorks Knowledge Base at www.agilent.com/chem/askb.

Reporting problems

If you have questions or have problems with the AssayMAP Bravo Platform, contact Agilent Automation Solutions Technical Support. For contact information, go to <https://www.agilent.com/en/contact-us/page>.

To report problems with...	Have the following information ready
Hardware	<ul style="list-style-type: none">Instrument serial number from the Bravo serial number labelShort description of the problem
Software	<ul style="list-style-type: none">Instrument serial number from the Bravo serial number labelShort description of the problemRelevant software version number (for example, automation control software, diagnostics software, and firmware)Error message text (or screen capture of the error message dialog box)Relevant files, such as log files
AssayMAP Cartridges	<ul style="list-style-type: none">Cartridge typeLot numberShort description of the problem

Common error messages

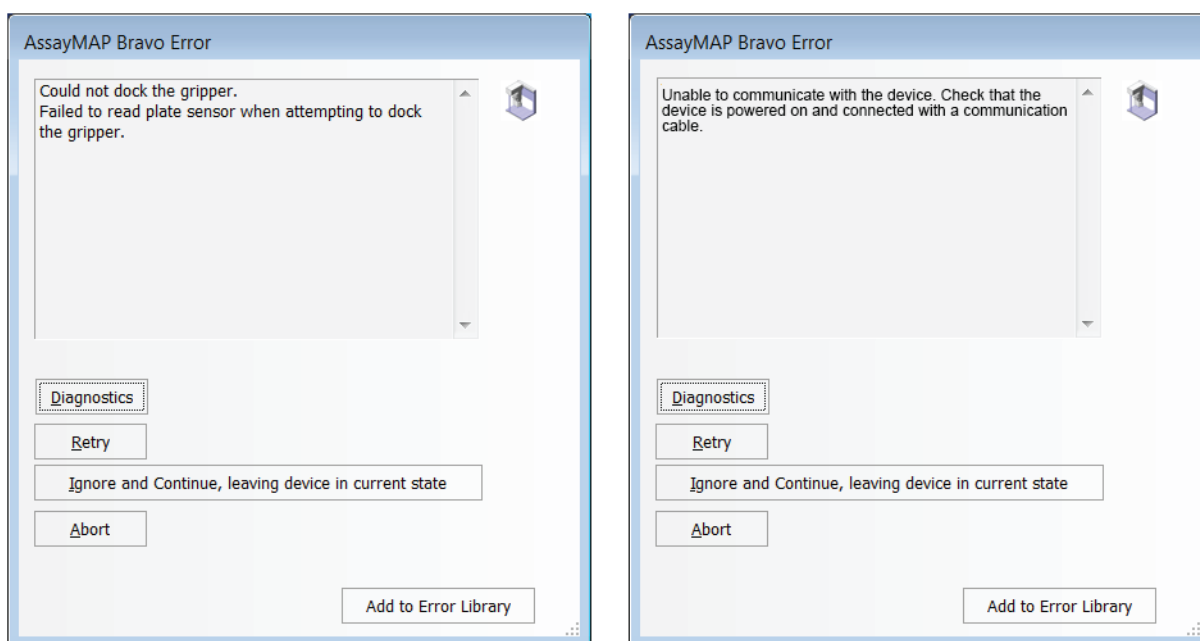
This section contains the following topics:

- [“Error 1. Could not dock gripper and other communication errors” on page 4](#)
- [“Error 2. Robot disable is active messages” on page 6](#)
- [“Error 3. W-axis was commanded to an invalid destination ” on page 9](#)
- [“Pausing and continuing a run in the workbench” on page 15](#)

If you cannot resolve an error message using the following procedures, see [“Reporting problems” on page 3](#).

Error 1. Could not dock gripper and other communication errors

Figure Error message examples



In addition to the errors shown in these examples, some of the other potential communication and homing errors are:

- Could not home the X-axis or Y-axis.
- Could not align X-axis or Y-axis motor.
- Error in moving to position on X-axis or Y-axis.
- Error homing the X-axis or Y-axis: Axis timed out during commutation.
- No response received from the pipette controller.
- Error retrieving homed status of X-axis or Y-axis while preparing a move.

The exact wording of the error message can vary depending on the Bravo model (for example, G5563A or G5523A) and the operation that the Bravo device was performing when the error occurred.

This type of error can occur if you attempt to run an AssayMAP application or utility after power cycling the Bravo Platform without first exiting the Protein Sample Prep Workbench and the VWorks software.

A communication can also occur if someone turns off the power to the AssayMAP Bravo Platform or a power or communication cable is disconnected or loose.

Use the following procedure to resolve any of these types of errors.

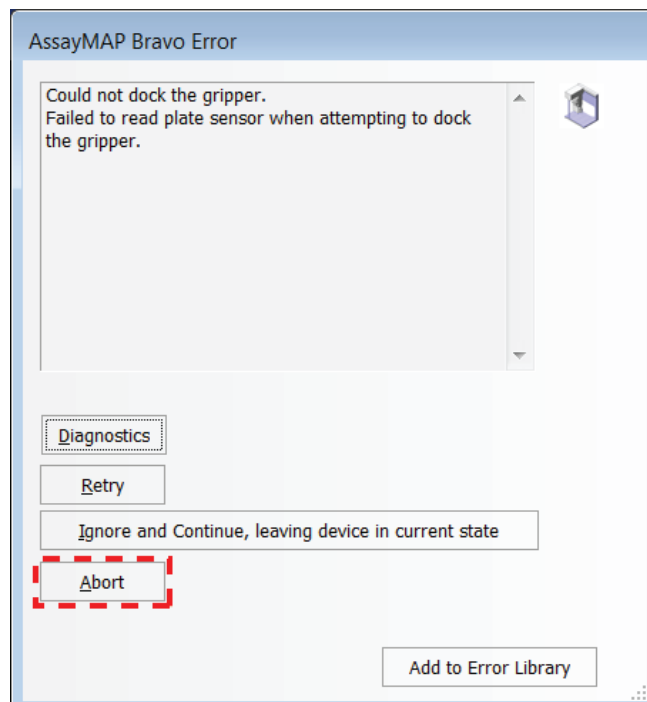
Resolving a communication error

IMPORTANT

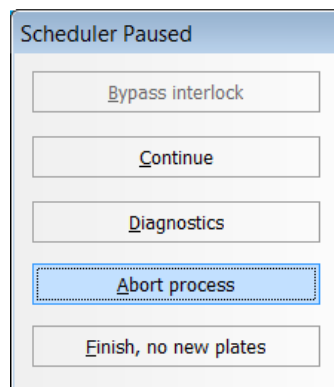
Make sure that you run the System Startup utility when starting up the AssayMAP Bravo Platform.

To resolve a communication error:

- 1 In the **AssayMAP Bravo Error** dialog box, click **Abort**.



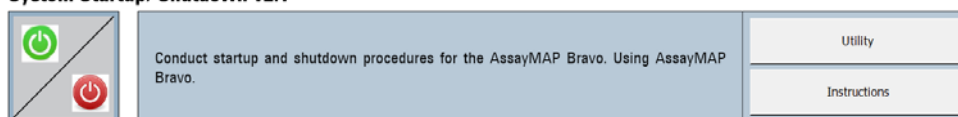
- 2 In the **Scheduler Paused** dialog box that opens, click **Abort process**.



- 3 Exit the Protein Sample Prep Workbench and the VWorks software.

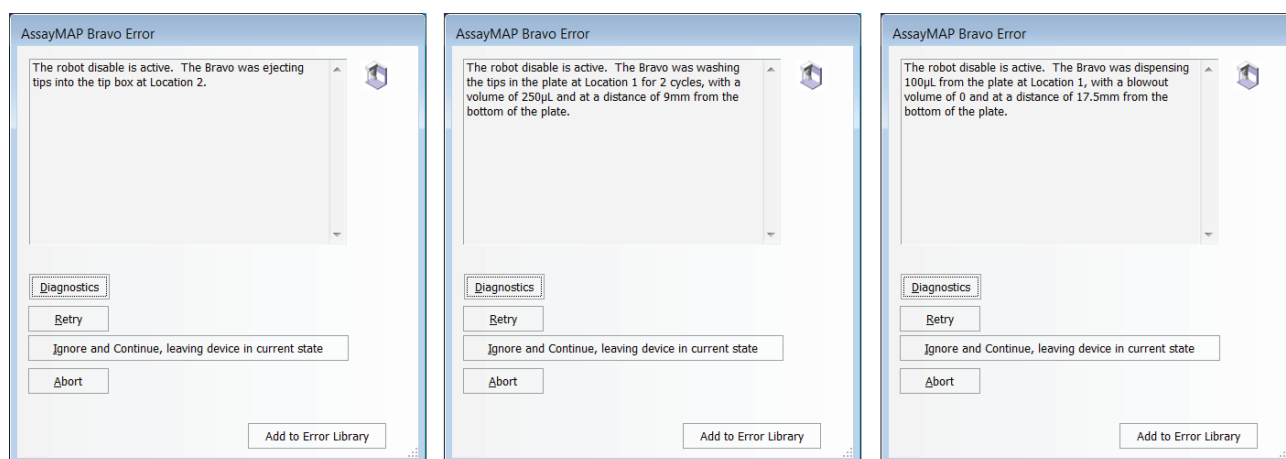
- 4 Power cycle the device as follows:
 - a Turn off the AssayMAP Bravo Platform and accessories.
 - b Wait a minute, and then turn on the AssayMAP Bravo Platform and accessories.
- 5 Start the Protein Sample Prep Workbench, and open the **Utility Library**.
- 6 In the **Utility Library**, locate the **System Startup/Shutdown** utility, and then click **Utility**. Follow the instructions for running the Startup protocol.

System Startup/Shutdown v2.1



Error 2. Robot disable is active messages

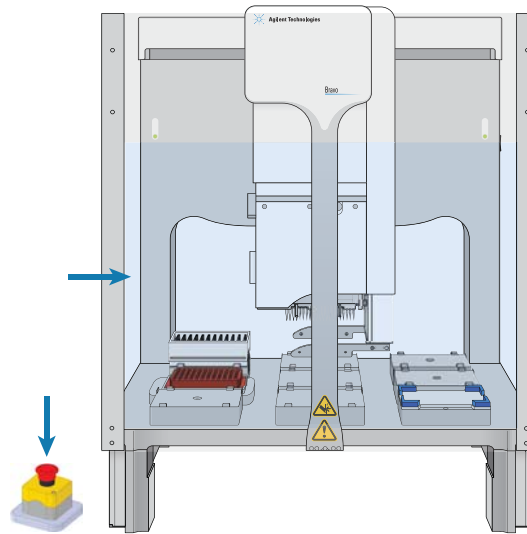
Figure Error message examples



A **robot disable is active** error message opens anytime you press the red button on the emergency-stop pendant or interrupt the Light Curtain, resulting in an emergency stop. The actual wording in the error message depends on the operation that was in progress at the time the interlock circuit was tripped.

Note: The wording in a given **robot disable is active** error message may not match the examples included here.

Figure AssayMAP Bravo Platform emergency-stop pendant and Light Curtain



About emergency stops and the safety interlock circuit

IMPORTANT

An emergency stop might be necessary to prevent a collision of the Bravo head with another object, such as misaligned labware. If you want to temporarily pause and then continue a run, see ["Pausing and continuing a run in the workbench" on page 15](#).

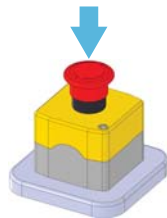
The AssayMAP Bravo Platform has a safety interlock circuit that is designed to protect operators from moving-parts hazards. The safety interlock circuit must be closed for the AssayMAP Bravo Platform to operate. The pendant and the Light Curtain are connected to the interlock circuit. Pressing the red button on the pendant or interrupting the Light Curtain trips the interlock circuit, causing the motion of the Bravo head to stop.

Stopping in an emergency

To stop in an emergency:

Press the red button on the emergency-stop pendant. The Bravo head stops immediately.

Figure Emergency-stop pendant

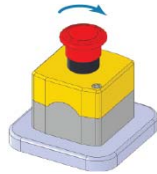


The **robot disable is active** error message opens.

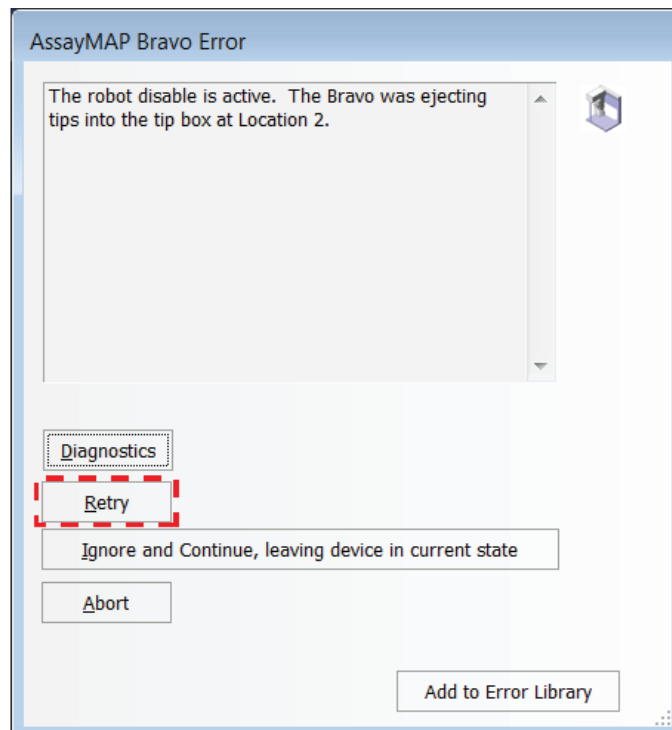
Restoring the Bravo device after an emergency stop

To restore the Bravo device after an emergency stop:

- 1 At the emergency-stop pendant, turn the red button clockwise. The spring-loaded button pops up.



- 2 *If applicable.* Remove any object that is interrupting the Light Curtain.
- 3 In the **AssayMAP Bravo Error** dialog box, click **Retry**.
In most cases, the AssayMAP Bravo Platform will be able to resume the run where it left off.

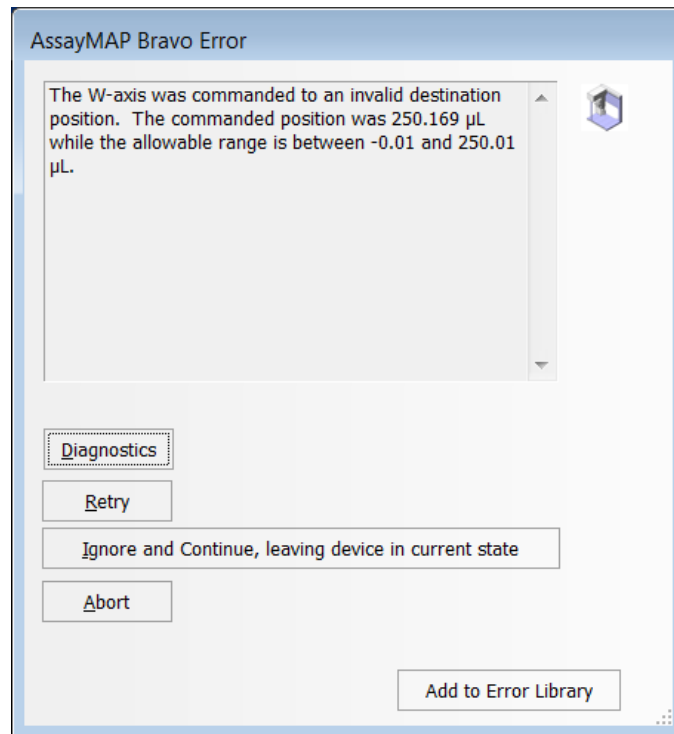


Note: In some rare cases, the **W-Axis commanded to invalid destination** error message may appear after attempting to retry. If this happens, see the ["Error 3. W-axis was commanded to an invalid destination"](#) on page 9 for instructions on how to recover.

Error 3. W-axis was commanded to an invalid destination

In some rare cases, when the interlock circuit is tripped, the **W-axis was commanded to an invalid destination** error message appears. The error message provides information about the deck location and the task that the AssayMAP Bravo Platform was performing when the error occurred.

Figure Example of W-axis was commanded to an invalid destination message



The correct recovery procedure depends on the task in process at the time and the deck location. The error message contains these details. Use the following scenarios to determine the correct recovery path for your situation:

- [“Scenario 1. Syringe wash using the wash station at deck location 1” on page 9](#)
- [“Scenario 2. Aspiration or Dispense at deck locations 2–9 or a Dispense to Waste at deck location 1” on page 10.](#)

Scenario 1. Syringe wash using the wash station at deck location 1

To recover from this error:

- 1 If necessary, turn the red button clockwise on the emergency-stop pendant to reset it, and ensure that no object is interrupting the Light Curtain.



- 2 In the **W-axis commanded to an invalid destination** error message, click **Retry** to recover from the error and continue with the syringe washing process.

Scenario 2. Aspiration or Dispense at deck locations 2–9 or a Dispense to Waste at deck location 1

If **The W-axis was commanded to an invalid destination** message occurs when the AssayMAP Bravo Platform is conducting an aspirate or dispense task that does not involve the wash station at deck location 1, it is not possible to recover an interrupted run without aborting and starting a new run. To start the new run at the point where the previous run left off, you select only the Application Settings steps that remain to be completed.

The Application Settings area of each application in the Protein Sample Prep Workbench contains Conduct Step options, as the following example shows.

Figure Conduct Step options in an AssayMAP application

Application Settings

Number of Full Columns of Cartridges

Step	Conduct Step?	Volume (μL)	Flow Rate (μL/min)	Wash Cycles
Initial Syringe Wash	<input checked="" type="checkbox"/>			<input type="text" value="3"/>
Prime	<input checked="" type="checkbox"/>	<input type="text" value="100"/>	<input type="text" value="300"/>	<input type="text" value="1"/>
Equilibrate	<input checked="" type="checkbox"/>	<input type="text" value="50"/>	<input type="text" value="10"/>	<input type="text" value="1"/>

These Conduct Step options enable rapid recovery of runtime problems or user mistakes when attempting to resume an interrupted protocol. An operator can stop the run, correct the problem, and then start a new run from the point at which the run was stopped by clearing the Conduct Step check boxes of the steps that have already been completed.

Workflow

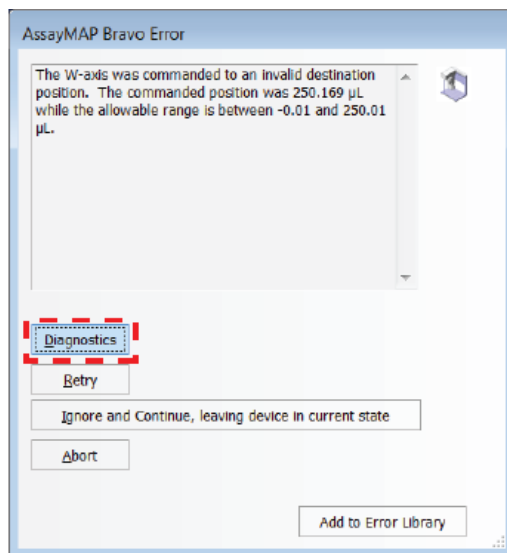
To resolve the **The W-axis was commanded to an invalid destination** error message for scenario 2, perform the following workflow in the order given.

Step	For this task...	See...
1	If necessary, turn the red button clockwise on the emergency-stop pendant, and remove any object that is interrupting the Light Curtain.	—
2	If the syringes contain reagents that you want to recover, open Bravo Diagnostics and reclaim the reagents before aborting the run.	“Using Bravo Diagnostics to reclaim reagents from the syringes” on page 11
3	If the syringes do not contain reagents to be recovered, abort the run.	“Aborting the run” on page 14

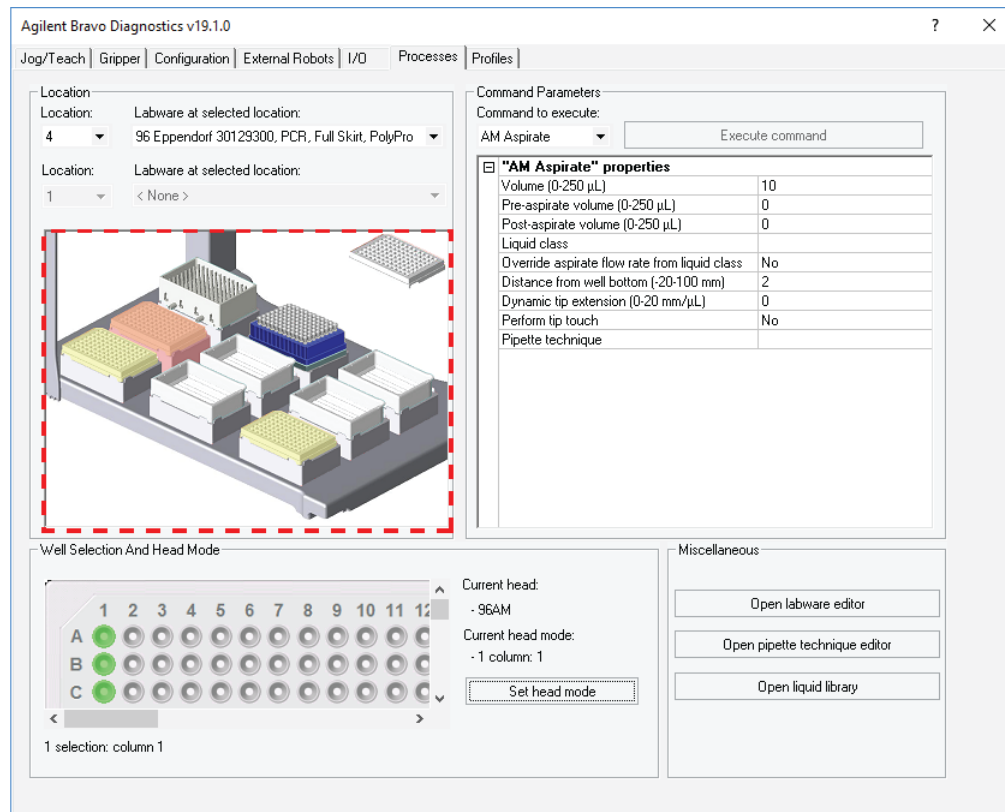
Using Bravo Diagnostics to reclaim reagents from the syringes

To reclaim reagents from the syringes using Bravo Diagnostics:

- 1 In the **AssayMAP Bravo Error** dialog box that contains the **W-axis was commanded to an invalid destination** message, click **Diagnostics**.



- 2 When the **Agilent Bravo Diagnostics** dialog box opens, click the **Processes** tab. The image of the Bravo deck should match the labware configuration that was specified for the run that was interrupted.



- 3 Determine whether cartridges are seated on the probes, and then do one of the following:
 - If cartridges are seated on the probes, continue with step 4 to remove the cartridges before reclaiming the reagents:
 - If the probes are bare, or if 250 µL pipette tips are pressed onto the probes, skip to step 5 to dispense the reagents.
- 4 To remove cartridges from the probes:
 - a In the **Location** area of the **Processes** tab, click deck location 2 in the image of the Bravo deck. Ensure that the 96AM Cartridge Seating Station is fully seated on the platepad at deck location 2.

IMPORTANT

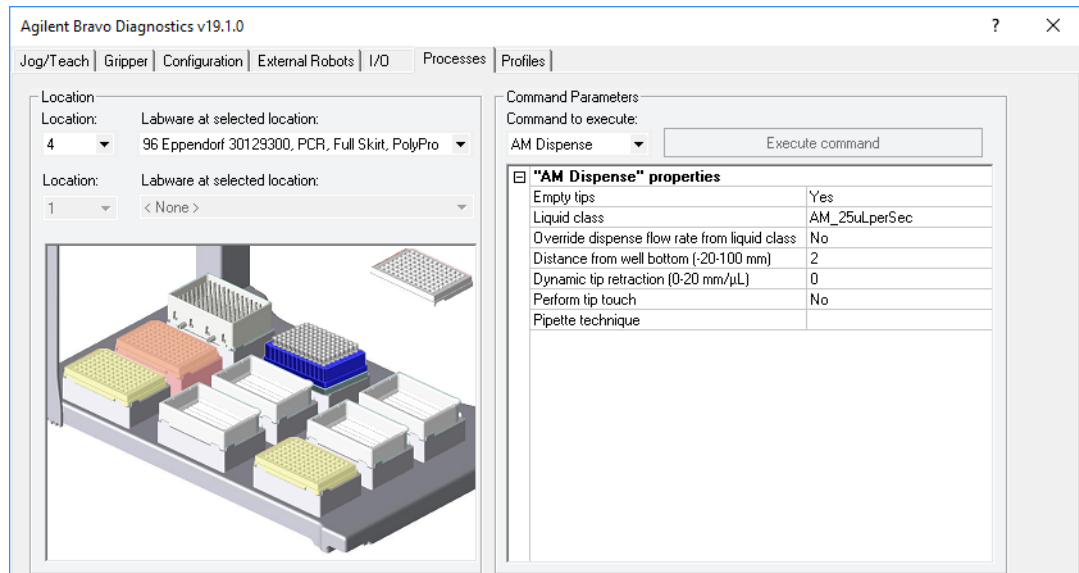
The AssayMAP cartridges should always be ejected into the 96AM Cartridge Seating Station.

- b In the **Command to execute** list, select **AM Cartridges Off**.
 - c Verify that the **Labware at selected location** setting matches the labware that is physically present on the Bravo deck.
 - d Click **Execute Command** to eject the cartridges.
- 5 To dispense the reagents:
 - a In the **Location** area of the **Processes** tab, click the deck location in the image of the Bravo deck where you intend to dispense the syringe contents.
 - b Verify that the **Labware at selected location** setting matches the labware that is physically present on the Bravo deck.

CAUTION

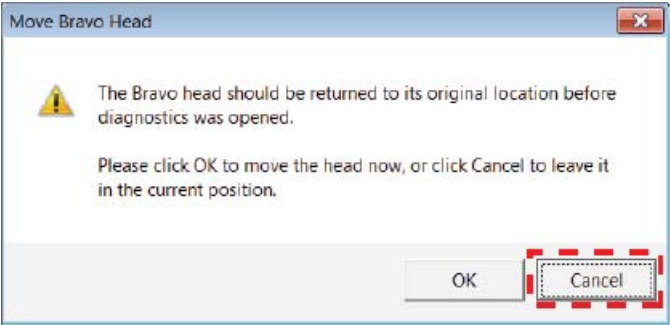
Failure to remove a lid from a microplate before executing any task using Bravo Diagnostics could cause a collision, resulting in equipment damage. If the target labware for the AM Dispense task has a lid, remove the lid before proceeding to the next step.

- c In the **Command to execute** list, select the **AM Dispense** task.
- d Enter the following settings in the **AM Dispense properties** area.



AM Dispense Properties	Setting
Empty tips	Yes
Liquid class	AM_25ulperSec
Override dispense flow rate from liquid class	No
Distance from well bottom (-20-100 mm)	2
Dynamic tip retraction (0-20 mm/ μ L)	0
Perform tip touch	No
Pipette technique	

- e Click **Execute command**. The Bravo head will move to the selected plate location, and empty the syringe contents into the plate.
- 6 Click **OK** at the bottom of the **Agilent Bravo Diagnostics** dialog box.
- 7 If the following **Move Bravo Head** message opens, click **Cancel** to prevent the Bravo head from moving back to its original location.

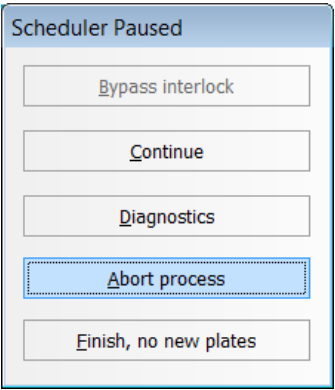


CAUTION Clicking OK in the Move Bravo Head dialog box at this step could cause the Bravo head to move to an unexpected location on the deck and result in a collision. Make sure that you click Cancel.

Aborting the run

To abort the run:

- 1 In the original **AssayMAP Bravo Error** dialog box, click **Abort**.
Note: The dialog may display **The robot disable is active message** or **The W-axis was commanded to an invalid destination** message.
- 2 In the **Scheduler Paused** dialog box that opens, click **Abort process**.



IMPORTANT Before you restart the run where it left off, clear the **Conduct Step** check boxes of the already completed steps in the Application Settings area for your application.

Application Settings				
Number of Full Columns of Cartridges				1
Step	Conduct Step?	Volume (µL)	Flow Rate (µL/min)	Wash Cycles
Initial Syringe Wash	<input checked="" type="checkbox"/>			3
Prime	<input checked="" type="checkbox"/>	100	300	1
Equilibrate	<input checked="" type="checkbox"/>	50	10	1

Pausing and continuing a run in the workbench

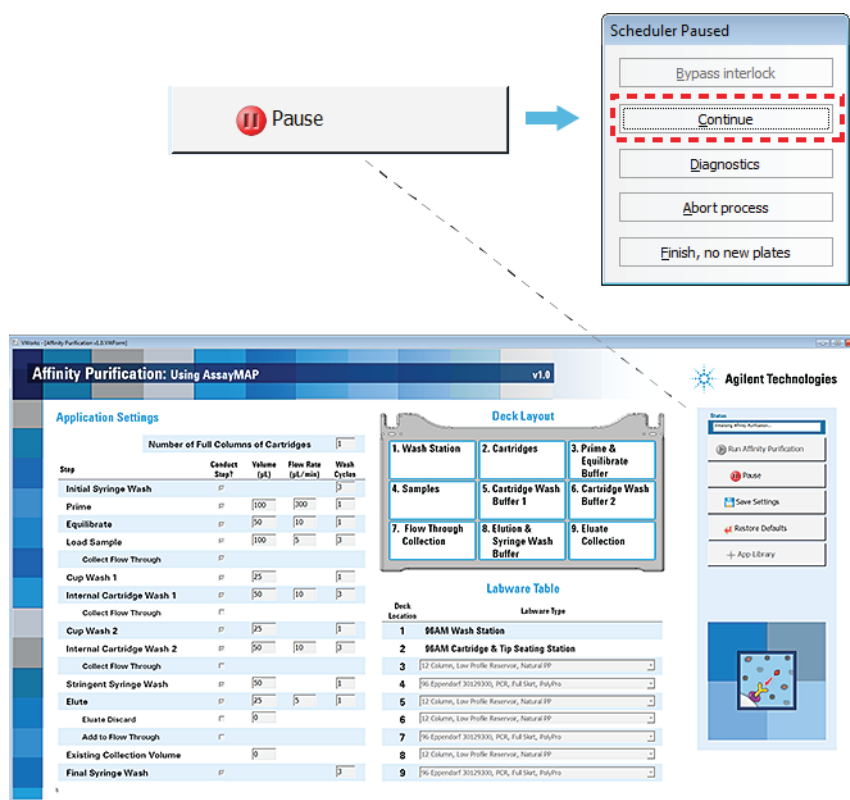
You can pause a run to introduce a labware that was forgotten during the setup, add reagents to a reservoir that is at risk of depleting, refill or empty the wash station carboys, and so forth.

IMPORTANT

Attempting to pause a running protocol to change a setting can be detrimental to the protocol. To change a setting in a protocol that is actively running, pause the protocol, select Abort process from the scheduler, and then change the setting. Clear the Conduct Steps check boxes for the steps that have been completed successfully, and then restart the protocol to complete the remaining steps.

To pause and then continue a run:

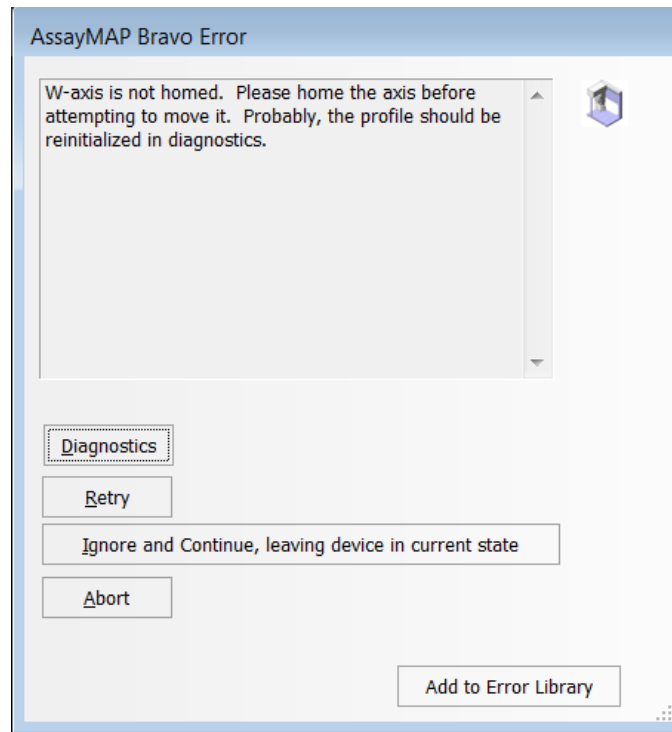
- 1 In the workbench application or utility control panel, click **Pause**.
The task currently in progress finishes before the protocol pauses. The Scheduler Paused dialog box opens.
- 2 While the Bravo device is idle, make the necessary changes to your run, for example, adjusting a labware position or volume.
- 3 To resume the run, click **Continue** in the **Scheduler Paused** dialog box.



Miscellaneous error messages

This chapter describes miscellaneous error messages that you may encounter on the AssayMAP Bravo Platform.

W-axis is not homed error message

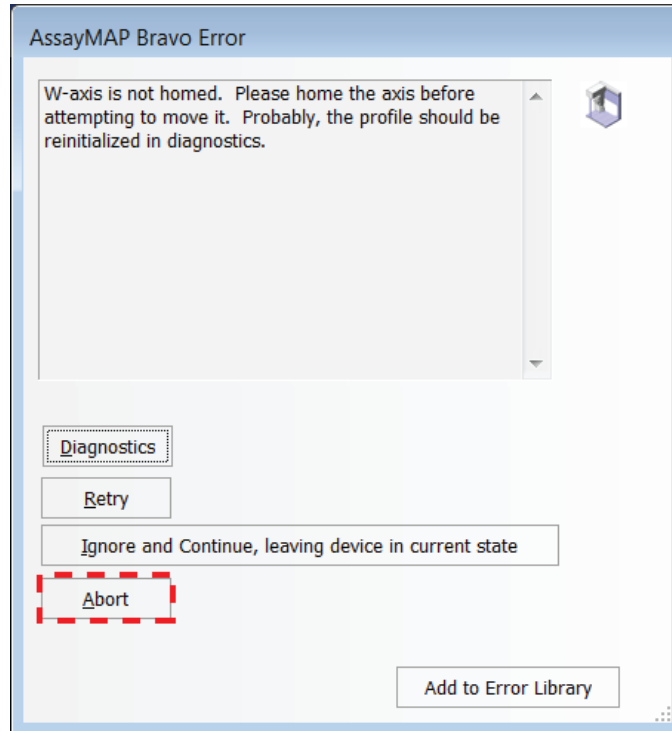


Resolving the W-axis is not homed error

If you cannot resolve an error message using the following procedures, see ["Reporting problems" on page 3](#).

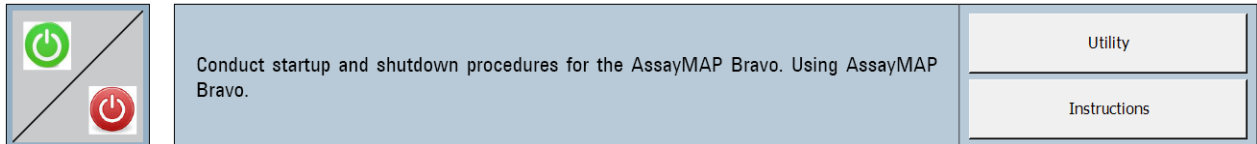
To resolve the W-axis is not homed error:

- 1 In the **AssayMAP Bravo Error** dialog box, click **Abort**.



- 2 Re-run the System Startup utility.

System Startup/Shutdown v2.1



- 3 If the error occurs again:
 - a Turn off the AssayMAP Bravo Platform.
 - b Restart the computer.
 - c Turn on the AssayMAP Bravo Platform.
 - d Start the Protein Sample Prep Workbench, and run the System Startup utility.

In This Book

This guide describes how to resolve some of the common errors that can occur when using the AssayMAP Bravo Platform.

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