Sutter Health
Sutter Roseville Medical Center

Origination:	*N/A*
Effective:	*Upon Approval*
Final Approved:	*N/A*
Last Revised:	*N/A*
Next Review:	*2 years after approval*
Owner:	*Irene Wittkop: Coord, Transfusion Service*
Policy Area:	*Lab - Transfusion Service*
References:	
Applicability:	*Sutter Roseville Medical Center*

Performing Echo Monthly Maintenance

Purpose: This procedure provides instructions on monthly maintenance, including decontamination, wiping down the probe block, cleaning the wash manifold, washer residual volume test and washer dispense accuracy test.

Policy:

- This procedure is required to be performed at least every 31 days.
- This procedure will be performed before relocating the instrument.
- Major relocation of the instrument is only done by Immucor technical service.
- Decontamination must always be followed by, Flush, Purge and Prime in that order
- Wiping down the probe block can be completed before or after the Decontamination procedure.
- The Wash Manifold should be cleaned while the Probe block is being decontaminated.

Reagents, & Supplies

Equipment	Reagents	Supplies
• Echo analyzer • Electronic balance • Electronic calculator	• Two(2) Capture R or RS3 strips (expired OK) • Four(4) RS3 strips (expired OK)	• Absorbent wiping material • De-ionized or distilled water • RelyOn Disinfectant Cleaner • Warm tap water

Procedure: Decontamination

Monthly maintenance takes about 1 to 1 ½ hours to complete.
An alert message is displayed on the bottom of the screen signifying that the buffer container is low during **Decontaminate instrument**, **Flush instrument**, and **Purge instrument**. This alert message does not negatively impact these three maintenance tasks.

Step	Action
1.	Prepare 1 liter of RelyOn by dissolving 10 grams of RelyOn (2 tablets) in1 liter of de-ionized or distilled water water.
2.	Swirl gently and allow tablets to dissolve before use. *Note: This takes about 15 minutes to dissolve.*
3.	Pour off a small amount of reconstituted RelyOn into a container and put aside to use when cleaning the probe block.
4.	Empty the PBS out of the PBS supply bottle and pour the remaining reconstituted RelyOn into the PBS container.
5.	Swirl the fluid inside the PBS supply container so that it comes into contact with all internal surfaces.
6.	Connect the PBS supply bottle to the Galileo Echo. *Note: Make sure that the tubing inside of the PBS supply bottle is fully extended to the bottom of the bottle and not hooked on the inside shelf.*
7.	Disconnect the drain waste tubing. Empty and reinstall the waste container.
8.	Select **Decontaminate instrument** maintenance task from the drop-down list on the **Run** tab of the **Maintenance** window.
9.	Press the **Start** button of the **Run** tab to begin the procedure.
10.	Allow the working recommended cleaning solution to soak for ten (10) minutes in the instrument after the procedure is complete.

Procedure: **Flush instrument**, **Purge instrument** and **Prime instrument** can be run as stand-alone maintenance tasks when

Flush	required	
	Step	**Action**
	1.	Empty the remaining cleaning solution out of the PBS supply bottle.
	2.	Thoroughly rinse all internal surfaces of the PBS bottle with DI water ensuring that all surfaces have been rinsed. Discard DI rinse water.
	3.	Refill PBS Supply bottle with at least 1 liter of fresh de-ionized or distilled water.
	4.	Connect the PBS supply bottle to the Galileo Echo. *Note: Make sure that the tubing inside of the PBS supply bottle is fully extended to the bottom of the bottle and not hooked on the inside shelf.*
	5.	Empty and reinstall the Waste container. *Note: If entire Decontamination procedure is being performed, emptying waste can be done after prime has been completed.*
	6.	Select **Flush instrument** maintenance task from the drop-down list on the **Run** tab of the **Maintenance** window.
	7.	Press the **Start** button of the **Run** tab to begin the procedure.
Procedure: Purge		
	Step	**Action**
	1.	Empty the remaining de-ionized or distilled water out of the PBS supply bottle.
	2.	Connect the empty PBS supply bottle to the Galileo Echo
	3.	Empty and reinstall the Waste container. *Note: If entire Decontamination procedure is being performed, emptying waste can be done after prime has been completed.*
	4.	Select **Purge instrument** maintenance task from the drop-down list on the **Run** tab of the **Maintenance** window.
	5.	Press the **Start** button of the **Run** tab to begin the procedure.
Procedure: Prime		
	Step	**Action**
	1.	Rinse PBS supply bottle with small amount of saline. Discard rinse.
	2.	Add 1 liter of fresh PBS to the PBS supply bottle. *Note: Make sure that the tubing inside of the PBS supply bottle is fully extended to the bottom of the bottle and not hooked on the inside shelf.*
	3.	Connect the PBS supply bottle to the Galileo Echo.
	4.	Select **Prime instrument** maintenance task from the drop-down list on the **Run** tab of the **Maintenance** window.
	5.	Press the **Start** button of the **Run** tab to begin the procedure.
	6.	Empty and reinstall the waste container. Use waste shuttle if applicable.
	7.	Initialize the analyzer. • If Fluidics error is encountered, prime analyzer 2 times and repeat initialization.
	8.	Enter operator initials/code and date performed on decontamination line of Echo Maintenance Record form.
Procedure: Wiping down the probe block	This can be done before or after Decontamination process. In order to minimize down time, the Wash manifold should be cleaned while the Probe block is being decontaminated	
	Step	**Action**
	1.	Power down the instrument and the computer.
	2.	Remove the shroud.
	3.	Check for leaks from bottom of probe by looking upwards form the bottom of the grey shield to the base of the probe and checking for salt accumulation

		If: / Then: Absent / Proceed to next step Present / • Use screwdriver to remove 2 screws attaching grey shield to probe block • Slide shield down probe and set it aside • Wipe down probe and base of block with DI water to remove salt residue • Slide shield up probe and reinsert screws
	4.	Apply the RelyOn solution set aside in Step 3 of the Decontamination procedure to the absorbent wiping material and wipe grey shield at base of probe.
	5.	Allow the RelyOn to remain on the probe block for 10 minutes.
	6.	While the RelyOn is working, perform the following housekeeping items: • Replace priming strips with 2 Capture strips (expired strips may be used but bar codes must be readable) • Check Wash Overflow Trough for spills. Wipe with warm water to clean as required. • Wipe mirrors gently with damp Kim Wipe or Lens Paper as needed, if dust is present. • Clean splashes or dust bunnies in lower cabinet with damp Kim Wipe or Lens Paper as needed. **DO NOT use canned air on analyzer!**
	7.	At the end of 10 minutes, wipe the probe block with distilled or de-ionized water. *Note: The RelyOn is corrosive so do not leave it on the block for an extended period of time before rinsing.*
	8.	Replace the shroud
	9.	Power up the instrument and the computer.
	10.	Initialize the analyzer.
	11.	Enter operator initials/code and date performed on Wipe down of Splash guard line of Echo Maintenance Record form

Procedure: Clean Wash Manifold		
	Step	**Action**
	1.	Loosen and remove the screw in the center of the front of the manifold with the flathead screw driver.
	2.	Disconnect the luer locks on the end of the manifold and remove the tubing. *Note: Be sure to leave the connectors inside the wash manifold and make sure that they are tight. Do not remove the bumpers from the body of the manifold.*
	3.	Use the stylus located in the clear plastic cylinder gripped by a clip located in the upper back right corner of the inside of the main instrument, to clean out the metal aspirating and dispensing probes.
	4.	Soak the manifold in warm tap water for 15-20 minutes.
	5.	After soaking, flush the manifold with warm tap water by pushing it through the luer using a syringe.
	6.	Slide the manifold back into the groove and secure it with the flathead screwdriver..
	7.	Reconnect the male and female tube endings matching them to their respective luer lock.
	8.	Perform initialization. • If Fluidics error is encountered, prime washer and repeat initialization.
	9.	Perform the Washer basic test.
	10.	If: / Then: Washer basic test passes / Proceed to Washer residual volume and Washer Accuracy Dispense Test Washer basic test fails / • Prime instrument and repeat • If unresolved, call technical service
	11.	Enter operator initials/code and date performed on Wash Manifold line of Echo Maintenance Record form

Procedure: Washer Residual Volume Test	This test should be performed in tandem with the **Washer dispense accuracy test** *Note: Residual volumes that exceed acceptable range may result in false negative antibody screen and ABID reactions.*

	Step	Action	
	1.	Record the serial number of the electronic balance, your initials, date of this task performance, facility name, and instrument serial number on the **Washer residual volume test** maintenance record.	
	2.	Select **Washer residual volume test** from the drop-down list on the **Run** tab of the **Maintenance** window.	
	3.	Weigh two (**2**) RS3 Capture strips and record the weight on the **Washer residual volume test** maintenance record.	
	4.	Place the two (**2**) strips into a strip holder and then place the holder in position **1** of a strip tray.	
	5.	Load the strip tray into strip tray position **1** of the strip tray loading bay.	
	6..	Press the **Start** button on the **Run** tab to start the task.	
	7.	Reweigh the two (**2**) strips when the test is complete and record the weight on the **Washer residual volume test** maintenance record.	
	8.	Using the electronic calculator, subtract the weight obtained in step **c** from the weight obtained in step **g** and record that value on the **Washer residual volume test** maintenance record.	
	9.	Interpret the acceptability of the resulting value based on the acceptable range and record this conclusion on the **Washer residual volume test** maintenance record.	

If:	Then:
Weight **is** within 0.06g and 0.16 g	Task has been successfully completed
Weight **is not** within 0.06g and 0.16g	• Analyzer is not acceptable for use until problem is resolved • Failures may be due to problems with Washer manifold or washer tubing. • Contact technical service as needed to resolve problem

	10.	Enter operator initials/code and date performed Washer residual volume test line of Echo Maintenance Record form	

Procedure: Washer Dispense Accuracy Test — This test should be performed in tandem with the **Washer Residual Volume test**

	Step	Action	
	1.	Record the serial number of the electronic balance, your initials, date of this task performance, facility name, and instrument serial number on the **Washer dispense accuracy test** maintenance record.	
	2.	Select **Washer dispense accuracy test** from the drop-down list on the **Run** tab of the **Maintenance** window.	
	3.	Weigh two (**2**) RS3 Capture strips and record the weight on the **Washer dispense accuracy test** maintenance record.	
	4.	Place the two (**2**) strips into a strip holder and then place the holder in position **1** of a strip tray.	
	5.	Load the strip tray into strip tray position **1** of the strip tray loading bay.	
	6.	Press the **Start** button on the **Run** tab to start the task.	
	7.	Reweigh the two (**2**) strips when the test is complete and record the weight on the **Washer dispense accuracy test** maintenance record.	
	8.	Using the electronic calculator, subtract the weight obtained in step **c** from the weight obtained in step **g** and record that value on the **Washer dispense accuracy test** maintenance record.	
	9.	Interpret the acceptability of the resulting value based on the acceptable range and record this conclusion on the **Washer dispense accuracy test** maintenance record.	

If:	Then:
Weight **is** within 1.92g and 2.08 g for each strip	Task has been successfully completed
Weight **is not** within 1.92g and 2.08g	• Analyzer is not acceptable for use until problem is resolved • Failures may be due to problems with Washer manifold

			or washer tubing. • Contact technical service as needed to resolve problem
	10.	Enter operator initials/code and date performed on Washer dispense accuracy test line of Echo Maintenance Record form	
Related Documents:		• Shutting Down and Starting Up the Echo Analyze	
Reference:		• Immucor, Inc. *Galileo Echo Operator Manual*. ECO-001-200 Norcross, GA	

All revision dates:

Attachments

Echo 2.0 Mainenance Record
Echo Washer Residual Volume and Washer Dispense Accuracy Record.pdf

Approval Signatures

Step Description	Approver	Date
Laboratory Director	Lindsey Westerbeck: Dir, Lab	pending