



STEM CELL LABORATORY (STCL)



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Routine Maintenance of BD FACSCalibur Flow Cytometers

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FLOW-GEN-001

ROUTINE MAINTENANCE OF BD FACSCALIBUR

FLOW CYTOMETERS

1 PURPOSE

- 1.1 This procedure should be followed when performing maintenance or while troubleshooting malfunctions on the BD FACSCalibur flow cytometers.

2 INTRODUCTION

- 2.1 In order to assure the reliability of the BD FACSCalibur Flow Cytometry Systems, daily, monthly, and semi-annual programs of preventive maintenance must be performed routinely. In addition, guidelines for minor troubleshooting must be available to the flow cytometry technologists should an instrument malfunction, since quite often the malfunction is remedied with simple troubleshooting techniques. A log book for written documentation of routine checks or problems is maintained in the flow cytometry section of the lab.

3 SCOPE AND RESPONSIBILITIES

- 3.1 This process should be performed as specified on each BD FACSCalibur Flow Cytometer. The laboratory director, manager, flow cytometry supervisor and flow cytometry staff are responsible for ensuring the requirements of this procedure are successfully met.

4 DEFINITIONS/ACRONYMS

- 4.1 DI-Deionized
- 4.2 BD-Becton Dickinson
- 4.3 PM-Preventive Maintenance
- 4.4 PN-Part number
- 4.5 MLS-Milliliters

5 MATERIALS

- 5.1 Deionized Water
- 5.2 Bleach, Clorox

6 EQUIPMENT

- 6.1 FACSCalibur flow cytometer, Becton Dickinson

7 SAFETY

- 7.1 See MSDS for Bleach

8 PROCEDURE

- 8.1 Daily Maintenance

- 8.1.1 Perform the instrument QC as in FLOW-GEN-014.
- 8.1.2 Prior to instrument shutdown, clean the sample injection tube and its protective outer sleeve by first aspirating a 0.5 ml sample of a 10% bleach dilution with the support arm moved to the right. Move the support arm to middle position (under the tube) and run with bleach solution for 5 minutes
- 8.1.3 Repeat the steps above using a test tube with deionized water.
- 8.1.4 Always leave a half filled tube of fresh DI water on the sampling site with the machine in standby prior to shutdown.
- 8.1.5 For instruments with a tube loader, remove the tray and put the water tube on the sampling site with the swing arm under the tube to hold it in place at shutdown.
- 8.1.6 Place a check and initial in the shutdown section of the instrument maintenance record log under the date performed.
- 8.2 Monthly Maintenance
 - 8.2.1 Remove the sheath reservoir and replace it with one designated only for use in monthly cleaning of the systems' fluidics.
 - 8.2.2 Disconnect the upper tubing of the sheath filter.
 - 8.2.3 Make ~2 liters of 10% Clorox bleach solution and add it to the cleaning (sheath) reservoir.
 - 8.2.4 Disconnect the sheath filter from the saline filter inlet and connect the sheath tubing (white) from the reservoir. This prevents the bleach from dissolving the filter paper in the filter.
 - 8.2.5 Place a tube with ~2.0 mls of a 10% bleach on the sample site and allow it to run for 20 minutes, using the Hi flow rate.
 - 8.2.6 Replace the bleach reservoir with one containing ~2 liters of DI water.
 - 8.2.7 Replace the tube on the sample site with one containing 2.0 mls of DI water and run on the Hi flow rate for 20 minutes.
 - 8.2.8 Replace the original sheath reservoir and reconnect the sheath filter tubing to the upper connector by pushing until you hear a click.
 - 8.2.9 Place a tube of water on the sampling site and leave the instrument on run for 10 minutes to fill the lines with sheath.
 - 8.2.10 If needed, clean the air filter located above the fluid reservoirs by rinsing with DI water and allowing it to dry before returning it to the machine.
 - 8.2.11 Place a check in the monthly preventive maintenance box on the instrument maintenance log.

8.3 Preventive Maintenance

- 8.3.1 At least once per year BD service engineers are scheduled to perform a more thorough PM on the FACSCalibur.

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- 8.3.2 The completed documentation of the PM is provided by the service engineer and is filed in the Troubleshooting/Preventive Maintenance binder within the flow cytometry section of the Stem Cell Laboratory.
- 8.4 Troubleshooting Instrument Malfunctions
 - 8.4.1 Minor troubleshooting guidelines can be found in the FACSCalibur Instructions for use manual (pn 643271 Rev A November 2007) located in the Flow Cytometry section of the Stem Cell Laboratory. The troubleshooting section starts on page 189 of this manual.
 - 8.4.2 Commonly observed problems are listed with possible causes and recommended solutions.
 - 8.4.3 Document problems and resolution steps in the Troubleshooting log. Sign and date all documentation.
 - 8.4.4 If none of the solutions solve the observed problem, then BD technical support should be contacted at (877) 232-8995, prompt 2,2.

9 RELATED DOCUMENTS/FORMS

- 9.1 FLOW-FORM-007 BD FACSCalibur Flow Cytometer Instrument QC Log
- 9.2 FLOW-FORM-006 BD FACSCalibur Flow Cytometer Instrument Maintenance Log

10 REFERENCES

- 10.1 FACSCalibur Instructions for use manual (pn 643271 Rev A November 2007)

11 REVISION HISTORY

Revision No.	Author	Description of Change(s)
05	M. Reese	1. Corrected section 9 document titles 2. Made minor style and typo edits

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