

BD Cytopeia™ Fluidic Kit User's Guide

For Research Use Only

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Becton, Dickinson and Company
BD Biosciences
2350 Qume Drive
San Jose, CA 95131 USA

BD Biosciences
European Customer Support
Tel +32.2.400.98.95
Fax +32.2.401.70.94
help.biosciences@europe.bd.com

bdbiosciences.com
ResearchApplications@bd.com

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Regulatory information

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

History

Revision	Date	Change made
23-17618-00	9/2015	Initial release

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Introduction

This chapter covers the following topics:

- About this guide (page 6)
- Conventions (page 7)
- Technical support (page 8)

About this guide

In this guide

This guide provides information for installing and removing the BD Cytopeia™ fluidic kit (also referred to in this guide as the disposable fluidic kit). In addition to becoming familiar with the instructions outlined in the guide, operators should complete the appropriate training on their instruments before operating the system.

This guide includes:

- Information about the contents of the BD Cytopeia fluidic kit
- Instructions for installing and removing the BD Cytopeia fluidic kit
- Instructions for replacing the central waste line





Additional documentation

See your instrument user's guide for additional information on operating and maintaining your system.

Conventions

Safety symbols

The following table lists the safety symbols used in this guide to alert you to potential hazards.

Symbol	Meaning
	Caution. Indicates the need for the user to consult the user's guide for important cautionary information such as warnings and precautions.
	Biological hazard
	Electrical hazard
	Laser hazard

Technical support

Introduction

This topic describes how to get technical assistance.

Contacting technical support

If assistance is required, contact your local BD Biosciences technical support representative or supplier. Visit our website, bdbiosciences.com, for up-to-date contact information.

When contacting BD Biosciences, have the following information available:

- Product name, part number, and serial number
 - Any error messages
 - Details of recent system performance
-

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About the BD Cytopenia fluidic kit

This chapter covers the following topics:

- Overview (page 10)
- About the disposable sheath bag (page 12)
- Converting to disposable fluidics (page 13)

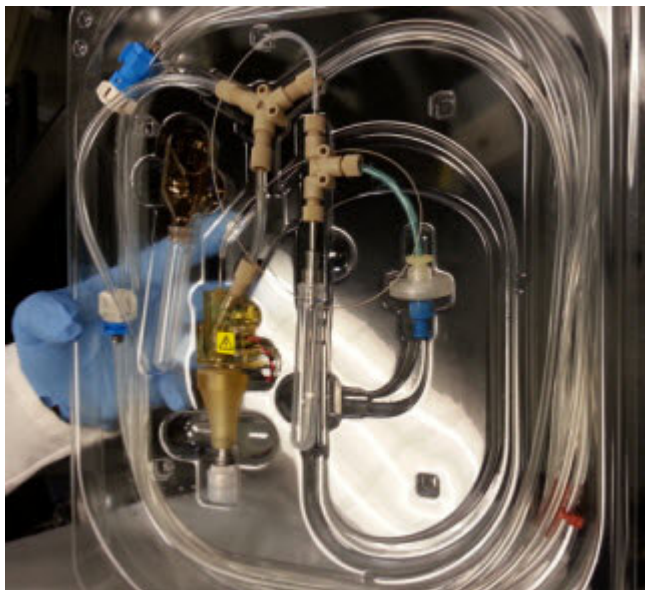
Overview

Introduction

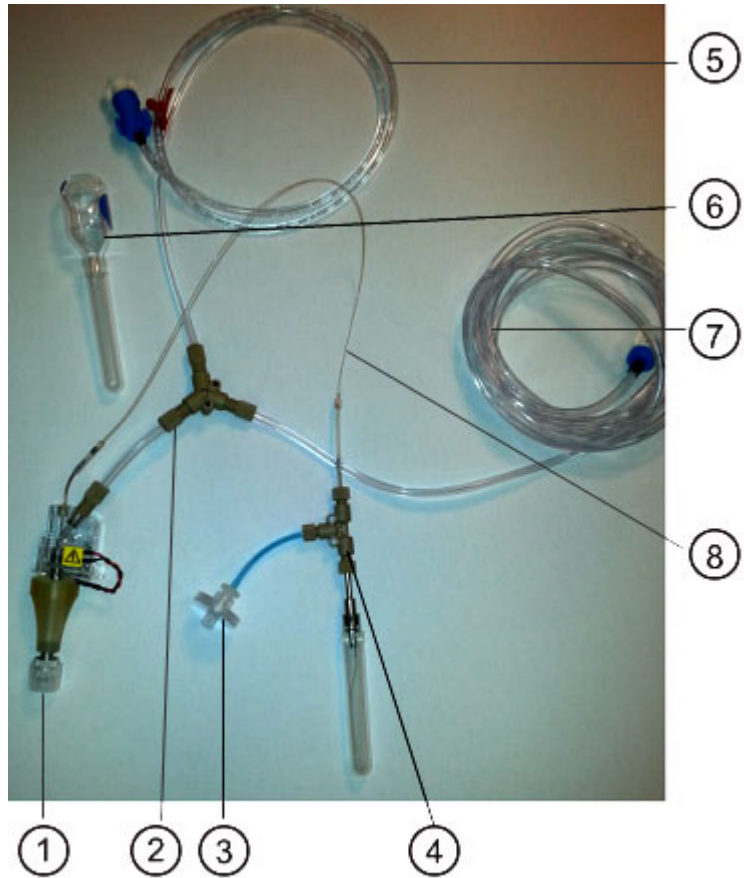
The BD Cytopeia fluidic kit provides aseptic, single-use fluidics components for sort applications. The BD Cytopeia fluidic kit with the 100- μ m nozzle can be used with different systems (BD FACSJazz™ cell sorter and BD Influx™ cell sorter) when an aseptic supply of sheath fluid is required. The kit can be used in systems enclosed in a biosafety cabinet (BSC) or installed on the benchtop.

Kit description

The disposable fluidic kit is packaged in a sealed, clear container and includes the Y-fitting with attached tubing, nozzle, debubble reservoir, connectors, and filters.



The components of the disposable fluidic kit are shown in the following image.



No.	Description
1	Nozzle assembly with a nozzle attached
2	Y-fitting
3	Sample air filter
4	Sample port
5	Waste/purge line

No.	Description
6	Debubble reservoir
7	Sheath line
8	Sample line

More information

- Removing the fluidics components (page 16)
 - Installing the disposable fluidic kit (page 23)
-

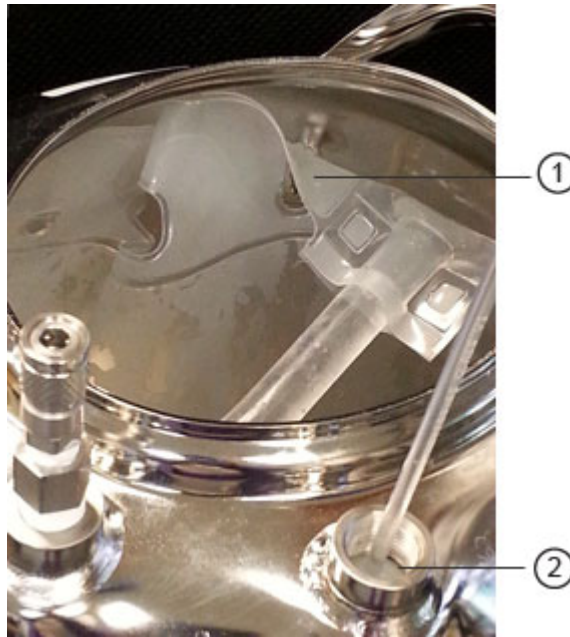
About the disposable sheath bag

Sheath bag description

The disposable sheath bag contains 4.5 L of aseptically filled and 0.2-micron filtered sheath fluid or phosphate buffered saline (PBS) and is not a part of the disposable fluidic kit. The sheath bag can be changed without changing the instrument fluidics. When the bag is empty, it can be replaced with a new one.

When using the sheath bag, the standard sheath filter is removed from the sheath line.

The sheath bag hangs on the hooks inside the sheath tank. When the sheath tank is closed, a ball seal is used to pressurized the tank.



No.	Description
1	Sheath bag hanging on hook
2	Ball seal

Converting to disposable fluidics

Introduction

Most sorters currently use a non-sterile fluidics system. However, a sorter can be converted to using disposable fluidics when there is a need for sterile fluidics. When some systems are converted to disposable fluidics, the central waste line will also need to be replaced.

Workflow

The following table indicates the steps involved in converting from standard fluidics to disposable fluidics.

No.	Description
1	Removing the fluidics components
2	Removing the sheath bag from the sheath tank
3	Installing the disposable fluidic kit
4	(Optional) Changing back to standard fluidics
5	(Optional, depending on the system) Replacing the central waste fluidic line

3

Using the BD Cytopenia fluidic kit

This chapter covers the following topics:

- Removing the fluidics components (page 16)
- Removing the sheath bag from the sheath tank (page 23)
- Installing the disposable fluidic kit (page 23)
- Changing back to standard fluidics (page 33)

Removing the fluidics components

Introduction

This topic describes how to remove the fluidics components from the system. This includes removing the sheath and waste/purge lines, the nozzle assembly, and the sample line.

This procedure works for systems with either standard or disposable fluidics.

Required materials

- 7/64-in., 5/64-in., and 3/32-in. Allen wrenches
-

Before you begin

- Verify that the existing nozzle assembly, sample line, and fluidic lines have been decontaminated.
 - For the BD FACSJazz cell sorter, verify that the software is on.
 - See your instrument User's Guide for more information on the components that laboratory personnel can replace.
-

Preparing the system

To prepare the system for removing the fluidics components:

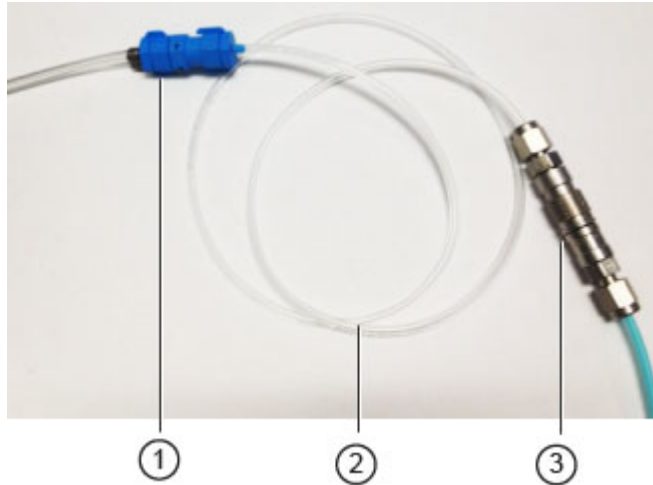
1. Verify that the main power and fluidics power are on.
 2. Verify that the air switch is on. Turn on the air switch if it is off.
 3. Install an empty tube on the sample station, ensure that it is firmly in place, and then open the tube-lock lever.
-

Removing the fluidic lines from the valves

To remove the fluidic lines from the valves:

1. Verify that the air line is not connected to the tank.
 - In systems with disposable fluidics, this is a blue connector.

- In systems with standard fluidics, this is a metal connector.

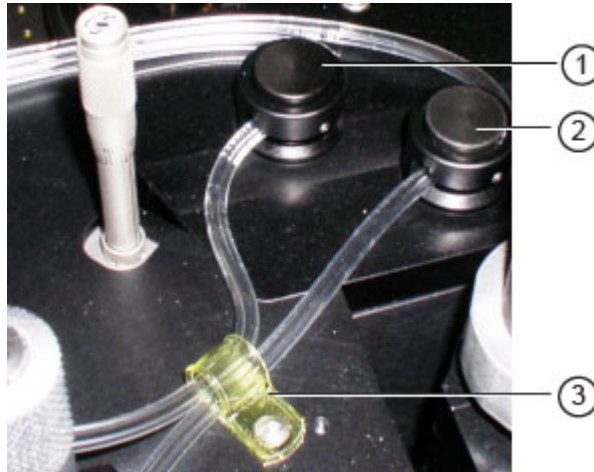


No.	Description
1	Blue connector
2	Tank line assembly
3	Metal connector

2. Press RINSE to open both the sheath and purge valves.

Note: For the BD FACSJazz cell sorter, some of these tasks are done in the software.

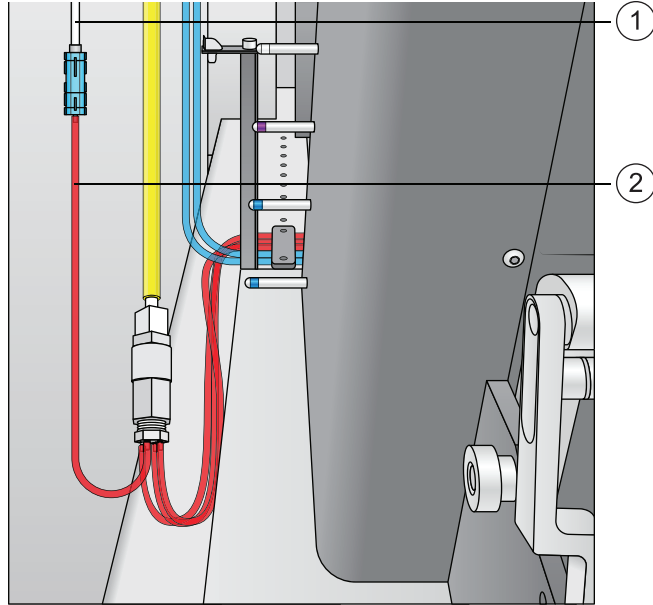
3. Remove the tubing from the two valves.



No.	Description
1	Sheath line valve, closest to the back
2	Waste/purge line valve
3	Clip, closest to the front

4. Remove the tubing from the clips that route the fluidic lines along the top and back of the instrument. Use a 5/64-in. Allen wrench if needed.
5. Locate and disconnect the central waste line on the left side of the instrument.

Note: The image shown is of a BD Influx cell sorter in a BSC.



No.	Description
1	Waste/purge line
2	Central waste line

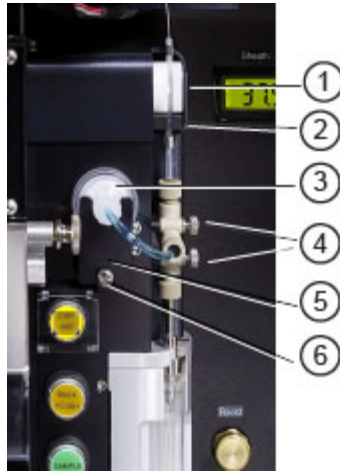
6. If your instrument is in a BSC, pull the sheath line through the left side port of the BSC.

Removing the sample line from the valve

To remove the sample line from the valve:

1. Press OVERRIDE to open the sample line valve.

2. Remove the sample line from the sample line valve.

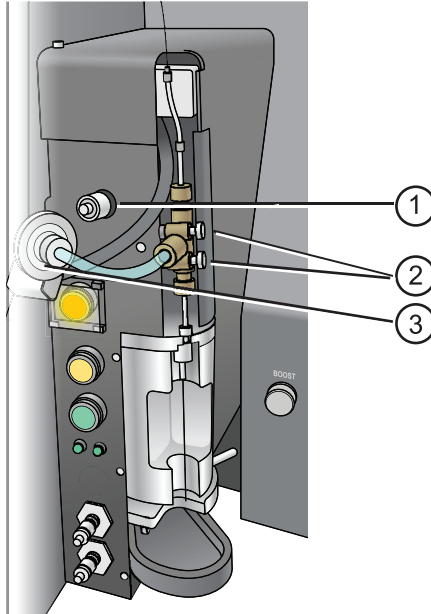


No.	Description
1	Sample line valve
2	Bubble detector
3	Sample tube air filter
4	Sample port thumbscrews
5	Air filter retainer
6	Air filter retainer thumbscrew

3. Disconnect the sample tube air filter.
 - a. Remove the thumbscrew that holds the air filter retainer in place.
 - b. Gently pull the air filter out until you can access the back of the filter.

Note: Hold the line in place with a tool to stop the line from retracting.

- c. Disconnect the filter by unscrewing the connector at the back of the filter.



No.	Description
1	Filter connector
2	Sample port thumbscrews
3	Filter

4. Remove the two thumbscrews that hold the sample port in place.
5. Rest the sample port on the top of cell sorter near the fluidics line valves.

Removing the nozzle assembly

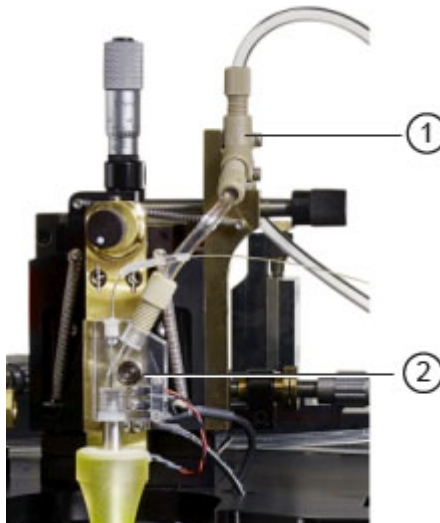
To remove the nozzle assembly:

1. Shut down the computer and turn off the fluidics and main power.



Caution: Electrical! To prevent possible electrical shock when working with the nozzle assembly, make sure that the power is off.

- Remove the two screws that hold the Y-fitting in place using the 3/32-in. Allen wrench.



No.	Description
1	Y-fitting
2	Nozzle assembly screw

- Remove the screw holding the nozzle assembly in place using the 7/64-in. Allen wrench.

The entire standard or disposable fluidic kit can now be removed from the cell sorter.

More information

- Removing the sheath bag from the sheath tank (page 23)
 - Installing the disposable fluidic kit (page 23)
-

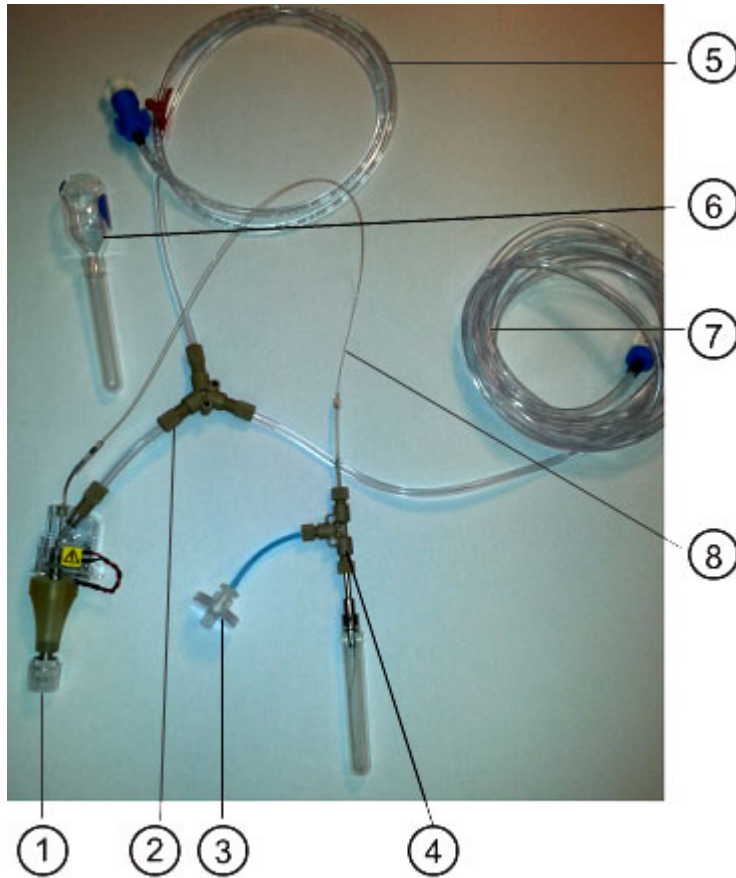
Removing the sheath bag from the sheath tank

Procedure	<p>To remove the sheath bag from the sheath tank:</p> <ol style="list-style-type: none">1. Turn off the air switch. Depressurize the tank if needed.2. Open the sheath tank.3. Disconnect the ball seal line from the instrument sheath line at the blue connector.4. Feed the ball seal line through the hole into the sheath tank.5. Remove the sheath bag, ball seal line, and filter from the sheath tank.
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More information	<ul style="list-style-type: none">• Replacing the central waste fluidic line
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Installing the disposable fluidic kit

Introduction	<p>This topic describes how to install the disposable fluidic kit. A new kit contains these items (fully assembled):</p> <ul style="list-style-type: none">• Sheath and waste/purge lines• Nozzle assembly with a nozzle attached• Sample port with the sample line and sample air filter• Debubble reservoir <p>Note: For systems that are installed in a HEPA enclosure or biosafety cabinet, you will need to install a new central waste line. See Replacing the central waste fluidic line (page 43).</p>
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No.	Description
1	Nozzle assembly with a nozzle attached
2	Y-fitting
3	Sample air filter
4	Sample port
5	Waste/purge line

No.	Description
6	Debubble reservoir
7	Sheath line
8	Sample line

-
- Required materials**
- 7/64-in., 5/64-in., and 3/32-in. Allen wrenches
 - Disposable fluidic kit

-
- Before you begin**
- Remove the existing disposable fluidic kit.

Note: Tighten all screws finger-tight. Do not over-tighten.

Preparing the system

To prepare the system for installing the disposable fluidic kit:

1. Verify that the sheath tank is depressurized and the air line is disconnected from the sheath tank.



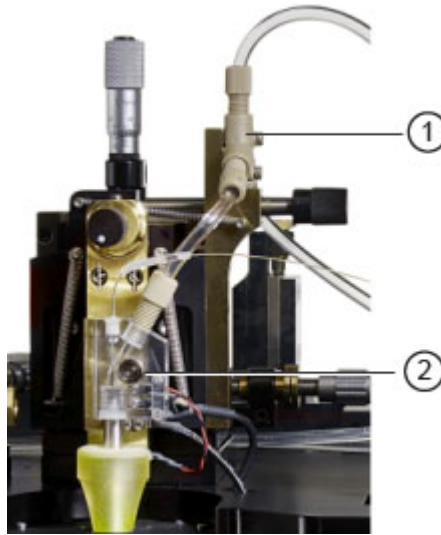
Caution: Electrical! To prevent possible electrical shock when working with the nozzle assembly, make sure that the power is off.

Installing the nozzle assembly

To install the nozzle assembly:

1. Uncoil the sample line.
2. Attach the nozzle assembly using the screw and the 7/64-in. Allen wrench.

The nozzle assembly will key into position automatically.



No.	Description
1	Y-fitting
2	Nozzle assembly screw

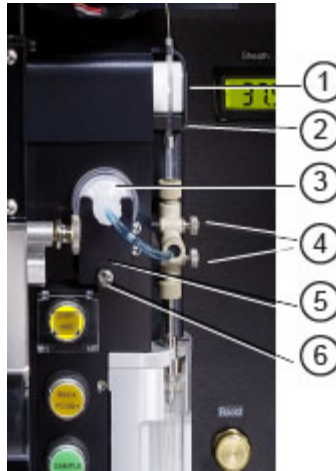
3. Attach the Y-fitting using the two screws and the 3/32-in. Allen wrench.
4. Carefully place the remaining disposable fluidic kit components on top of the cell sorter near the fluidics valves. Verify that the components are securely in place and not likely to fall.

Installing the sample line

To install the sample line:

1. Turn the main power and fluidics power on.
2. Verify that the air switch is on.
3. Press the OVERRIDE button.

- Attach the sample port using the two thumbscrews.



No.	Description
1	Sample line valve
2	Bubble detector
3	Sample tube air filter
4	Sample port thumbscrews
5	Air filter retainer
6	Air filter retainer thumbscrew

- Insert the silicone section of the tubing into the valve.
- Verify that the sample line is not blocking the bubble detector, which is just below the valve.

The bubble detector should have only silicone tubing in front of it. When the tubing is inserted properly, the bubble detector will register that there is air in the sample line, and the LED fault light # 2 will turn off.

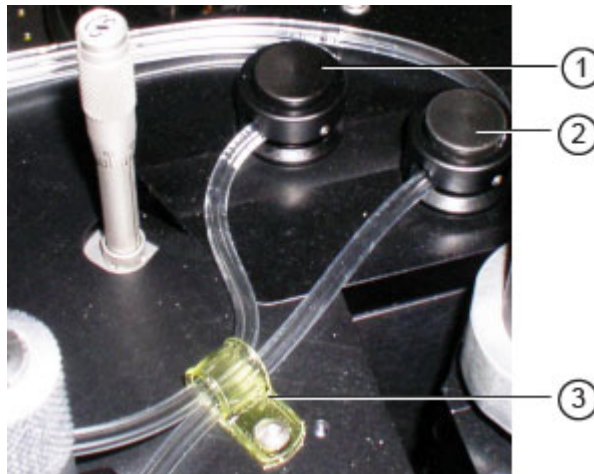
- Press **VERRIDE** to close the sample line valve.

8. Attach the sample tube air filter.
 - a. Attach the filter by screwing on the connector at the back of the filter.
 - b. Remove the tool holding the filter connector in place.
 - c. Reattach the air filter retainer using the thumbscrew.

Installing the fluidic lines

To install the fluidic lines:

1. Press RINSE to open both the sheath and waste/purge valves.
2. Install the new tubing into the two valves. Attach the sheath line onto the back left valve, and the waste/purge line to the front right valve.

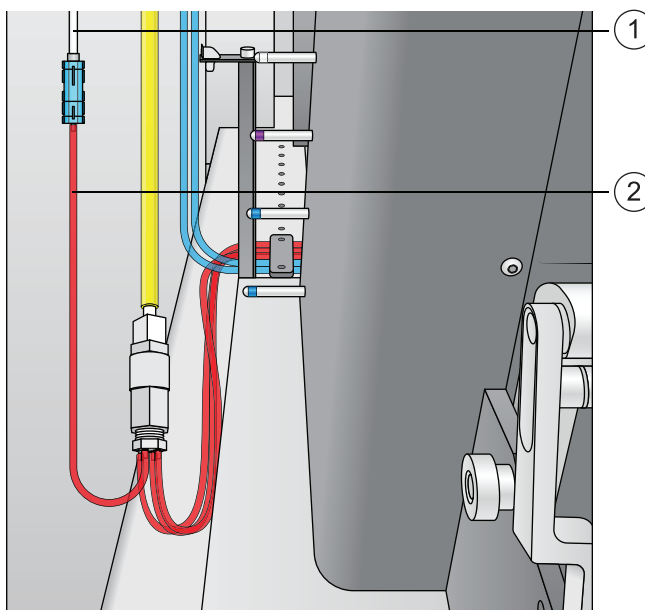


No.	Description
1	Sheath line valve, closest to the back
2	Waste/purge line valve
3	Clip, closest to the front

3. Press RINSE to close the valves.

4. Insert the tubing into the clips that route the fluidic lines along the top and back of the instrument. Use a 5/64-in. Allen wrench if needed.
5. Connect the waste/purge line to the central waste line located on the left side of the cell sorter.

Note: The image shown is of a BD Influx cell sorter in a BSC.



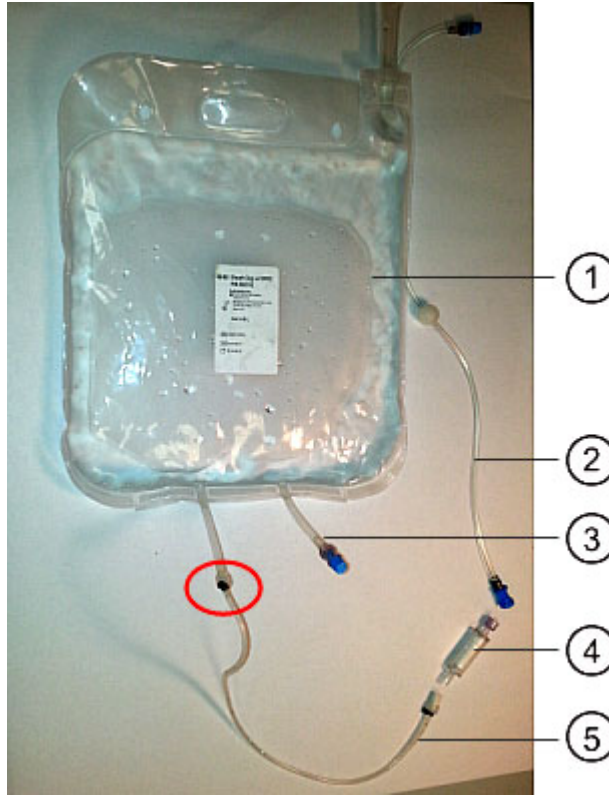
No.	Description
1	Waste/purge line
2	Central waste line

6. Pull the sheath line through the side port out of the BSC if needed.

Installing the sheath bag

To install the sheath bag:

1. Open the valve on the sheath line of the sheath bag by separating the valve finger located at the bag to tubing interface (5, red circle).



No.	Description
1	Sheath bag
2	Ball seal line

No.	Description
3	Injection line
4	0.2- μm sheath filter
5	Sheath line

2. Connect the optional 0.2- μm sheath filter to the sheath bag line.



No.	Description
1	To sheath fluid
2	To ball seal line

3. Connect the ball seal line to the 0.2- μm sheath filter.

If the optional 0.2- μm sheath filter is not required, then the sheath line will connect directly to the ball seal line.

4. Hang the sheath bag inside the sheath tank. Verify that the sheath and injection lines extending from the end of the sheath bag are placed on top of the sheath bag and not under it.



5. Pull the ball seal line from inside the sheath tank, out through the sheath tank opening until you feel some resistance. Continue holding the line in this position until it seals.



6. Connect the ball seal line blue connector to the instrument sheath line.
7. Close the sheath tank lid and verify that the depressurization valve is closed.
8. Switch sheath tank air ON.
9. Reconnect the air line to the sheath tank.

10. Pressurize the sheath tank by pulling up on the ball seal line until there is resistance and the ball seal seals firmly.

This may take a few minutes.

Note: For low pressure testing, raise the pressure to about 30 psi to pressurize the tank, and then lower the pressure.

More information

- Removing the fluidics components (page 16)
 - Changing back to standard fluidics (page 33)
-

Changing back to standard fluidics

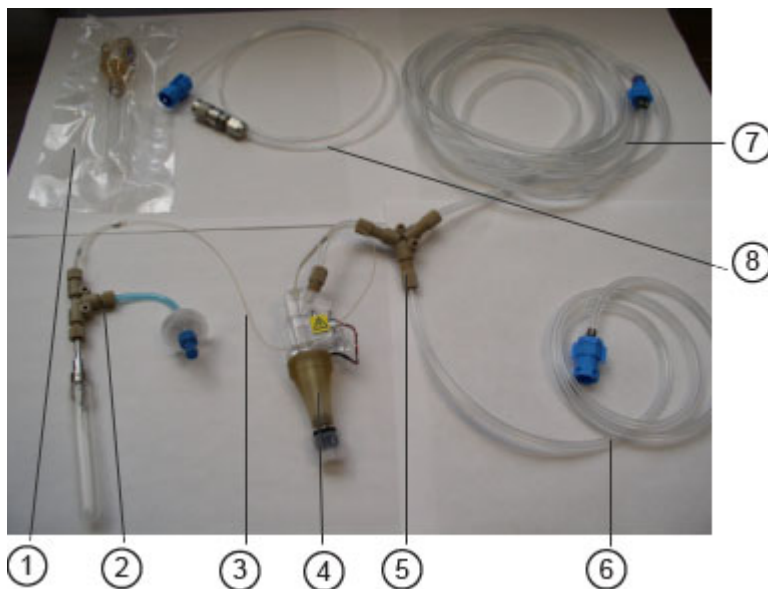
Introduction

This topic describes how to revert back to standard fluidics. A standard kit contains these items (fully assembled):

- Sheath and waste/purge lines including the line from the sheath tank to the sheath filter
 - Nozzle assembly with a nozzle attached
 - Sample port with the sample line and sample air filter
 - De-bubble reservoir
-

Required materials

- 7/64-in., 5/64-in., and 3/32-in. Allen wrenches
- Standard fluidics components



No.	Description
1	Debubble reservoir
2	Sample port
3	Sample line
4	Nozzle assembly
5	Y-fitting
6	Waste/purge line
7	Sheath line
8	Tank line assembly

Before you begin

- Remove the existing disposable fluidic kit.

Note: Tighten all screws finger-tight. Do not over-tighten.

Preparing the system

To prepare the system for changing back to the standard fluidics:

1. Verify that the sheath tank is depressurized and the air line is disconnected from the sheath tank.



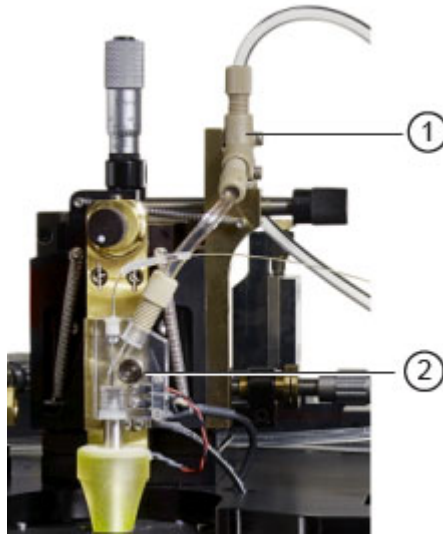
Caution: Electrical! To prevent possible electrical shock when working with the nozzle assembly, make sure that the power is off.

Installing the nozzle assembly

To install the nozzle assembly:

1. Verify that the system is OFF. Turn the system off if needed.
2. Uncoil the sample line.
3. Attach the nozzle assembly using the screw and the 7/64-in. Allen wrench.

The nozzle assembly will key into position automatically.



No.	Description
1	Y-fitting
2	Nozzle assembly screw

4. Attach the Y-fitting using the two screws and the 3/32-in. Allen wrench.
5. Carefully place the remaining disposable fluidic kit components on top of the cell sorter near the fluidics valves. Verify that the components are securely in place and not likely to fall.

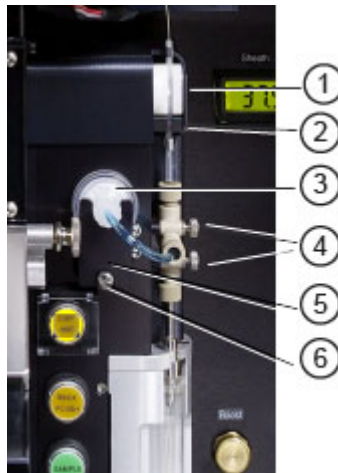
Installing the sample line

To install the sample line:

1. Turn the main power and fluidics power on.
2. Verify that the air switch is on.
3. Press the OVERRIDE button.

Note: For the BD FACSJazz cell sorter, use the OVERRIDE button in the software.

- Attach the sample port using the two thumbscrews.



No.	Description
1	Sample line valve
2	Bubble detector
3	Sample tube air filter
4	Sample port thumbscrews
5	Air filter retainer
6	Air filter retainer thumbscrew

- Insert the silicone section of the tubing into the valve.
- Verify that the sample line is not blocking the bubble detector, which is just below the valve.

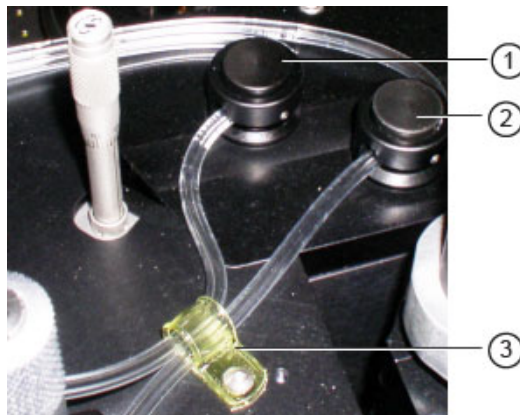
The bubble detector should have only silicone tubing in front of it. When the tubing is inserted properly, the bubble detector will register that there is air in the sample line, and the LED fault light # 2 will turn off.

7. Press OVERRIDE to close the sample line valve.
8. Attach the sample tube air filter.
 - a. Attach the filter by screwing on the connector at the back of the filter.
 - b. Remove the tool holding the filter connector in place.
 - c. Reattach the air filter retainer using the thumbscrew.

Installing the fluidics lines

To install the fluidics lines:

1. Press RINSE to open both the sheath and waste/purge valves.
2. Install the new tubing into the two valves. Attach the sheath line onto the back left valve, and the waste/purge line to the front right valve.

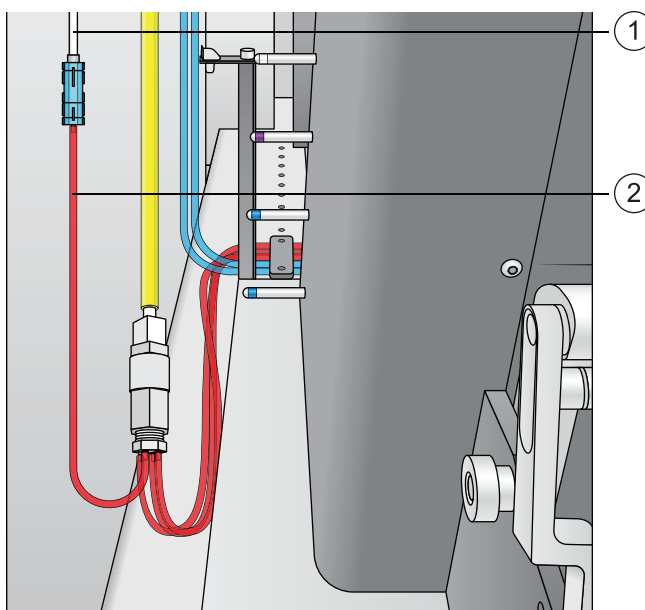


No.	Description
1	Sheath line valve, closest to the back
2	Waste/purge line valve
3	Clip, closest to the front

3. Press RINSE to close the valves.

4. Reconnect the air line to the sheath tank and pressurize the sheath tank.
5. Insert the tubing into the clips that route the fluidics lines along the top and back of the instrument. Use a 5/64-in. Allen wrench if needed.
6. Connect the waste/purge line to the central waste line located on the left side of the cell sorter.

Note: The image shown is of a BD Influx cell sorter in a BSC.



No.	Description
1	Waste/purge line
2	Central waste line

7. Pull the sheath line through the side port out of the BSC.
8. (Optional) Attach a new sheath filter if needed.

9. Attach the tank line assembly to the sheath tank.
-

More information

- Removing the fluidics components (page 16)
 - Installing the disposable fluidic kit (page 23)
-

4

Central waste fluidic line

This chapter covers the following topics:

- Central waste fluidic line overview (page 42)
- Replacing the central waste fluidic line (page 43)

Central waste fluidic line overview

Introduction

This topic describes the central waste fluidic line.

Replacement

To use the BD Cytopeia fluidic kit, some systems will need to have the standard central waste fluidic line replaced with a longer central waste fluidic line.

The central waste line will ship with the 3-gallon sheath tank. This line is required for the BD Influx cell sorter in a HEPA enclosure, the BD FACSJazz cell sorter, and the BD FACSJazz cell sorter in a BSC. It is a one-time replacement only.

Component function

The central waste fluidic line connects the waste/purge fluidic line to the waste tank.

More information

- Replacing the central waste fluidic line (page 43)
-

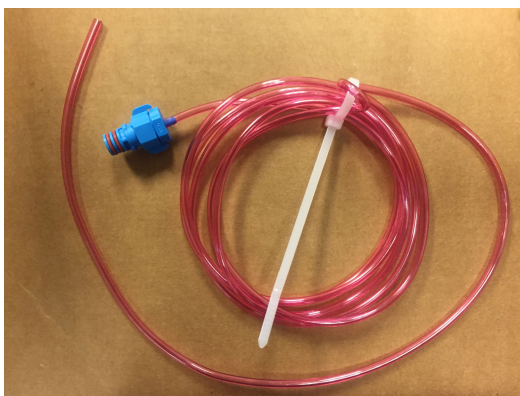
Replacing the central waste fluidic line

Introduction

This topic describes how to replace the central waste fluidic line. Replacing the central line is a one-time installation that needs to be done only when switching to disposable fluidic kit.

Required materials

- New central waste fluidic line.



Before you begin

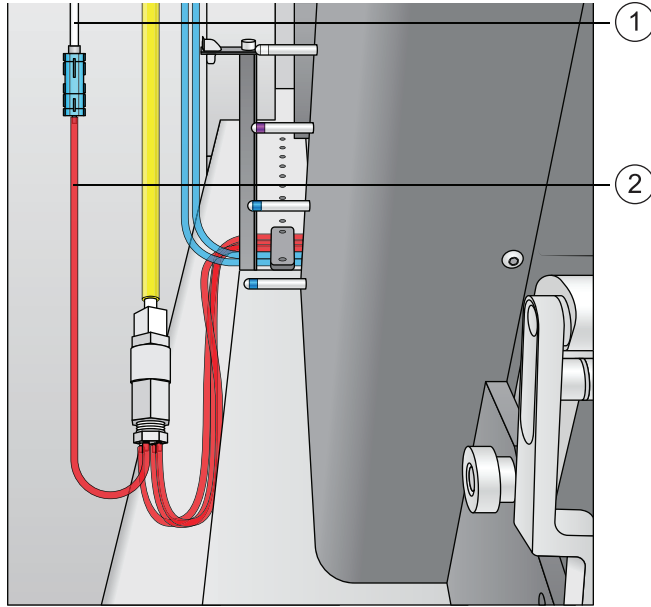
- Verify that the current central waste fluidic line has been decontaminated.
-

Procedure

To replace the central waste fluidic line:

1. Perform a dry shutdown. See your instrument User's Guide for information on the system shutdown workflow.
2. Disconnect the current central waste line from the waste/purge line, at the blue connector located on the left side of the instrument inside the BSC.

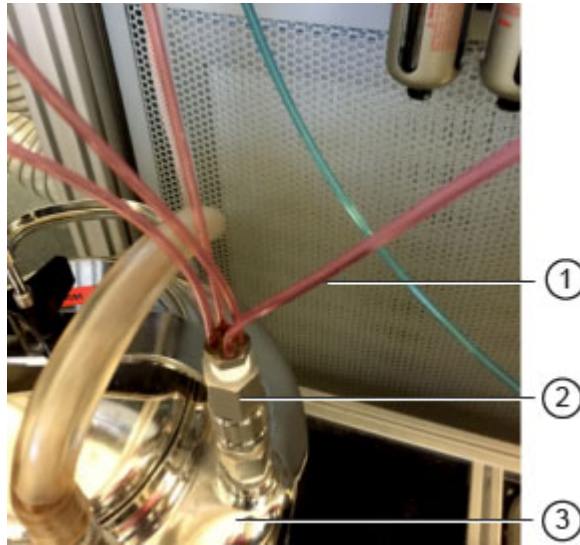
Note: The image shown is of a BD Influx cell sorter in a BSC. Note that the 4-prong connector is inside the BSC and the central waste line is shorter.



No.	Description
1	Waste/purge line
2	Central waste line

3. For BD FACSJazz instruments, pull the current central waste line from the waste tank line connector located outside the BSC.

Note: The 4-prong connector is outside the BSC.



No.	Description
1	Central waste line
2	Waste tank line connector
3	Waste tank

4. Connect the central waste line to the waste/purge line using the blue connector on the left side of the instrument. If the system is installed in a biosafety cabinet, feed the central waste line through the biosafety cabinet port.
5. Push the new central waste line into the waste tank line connector.

More information

- Central waste fluidic line overview (page 42)
-

