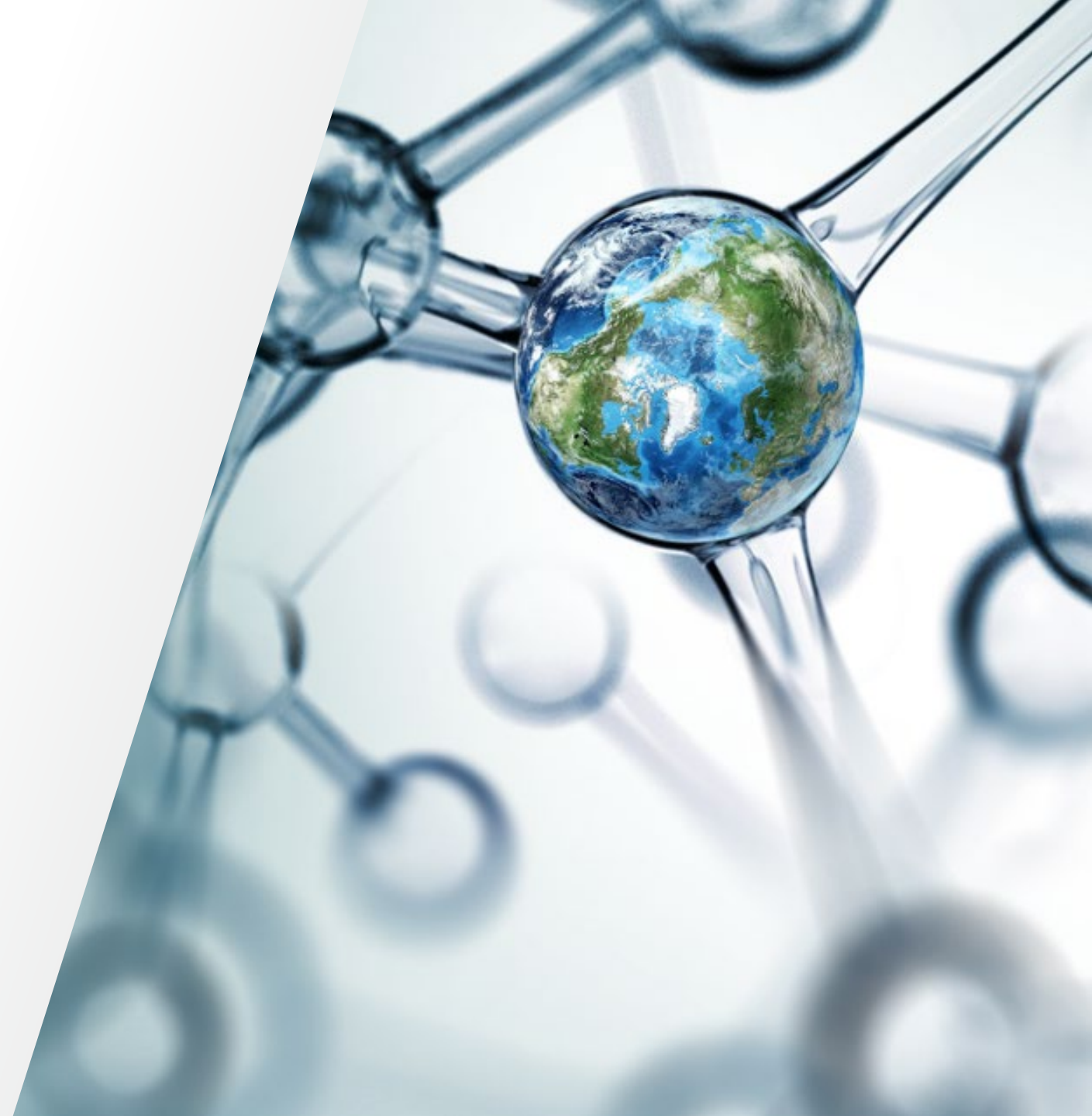


# Field Repair Procedure

## Replace Fiber Block Flippers

 The world leader in serving science



# Revisions

Revision	Change Description	Changed By/Date
A	New Release	DMR 05/03/2023

# Why are you doing this operation?

## Symptoms

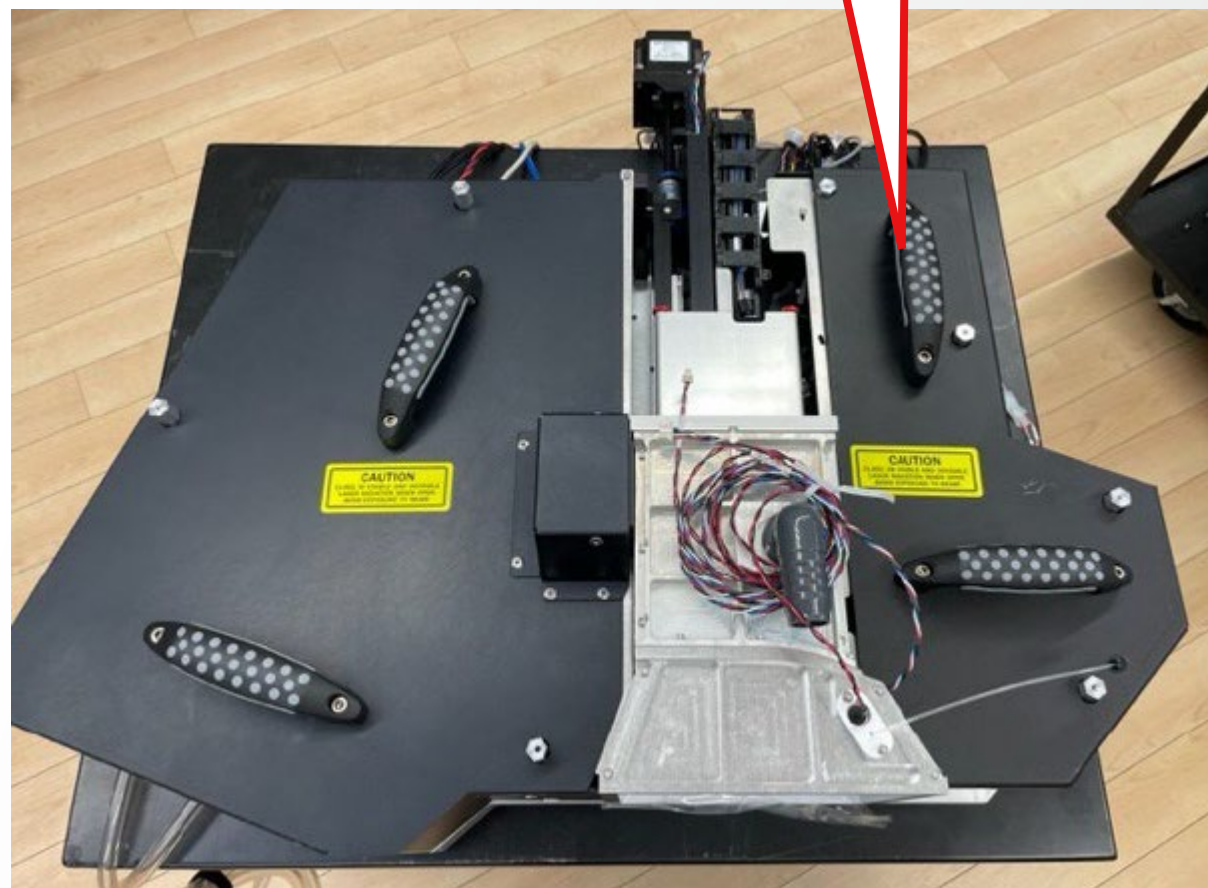
- No signal detected from ORB
- No signal detected from all lasers
- No signal from 405 laser

## Failure Modes

- Flippers do not flip
- Flipper has backed out of fiber block

# Remove Covers

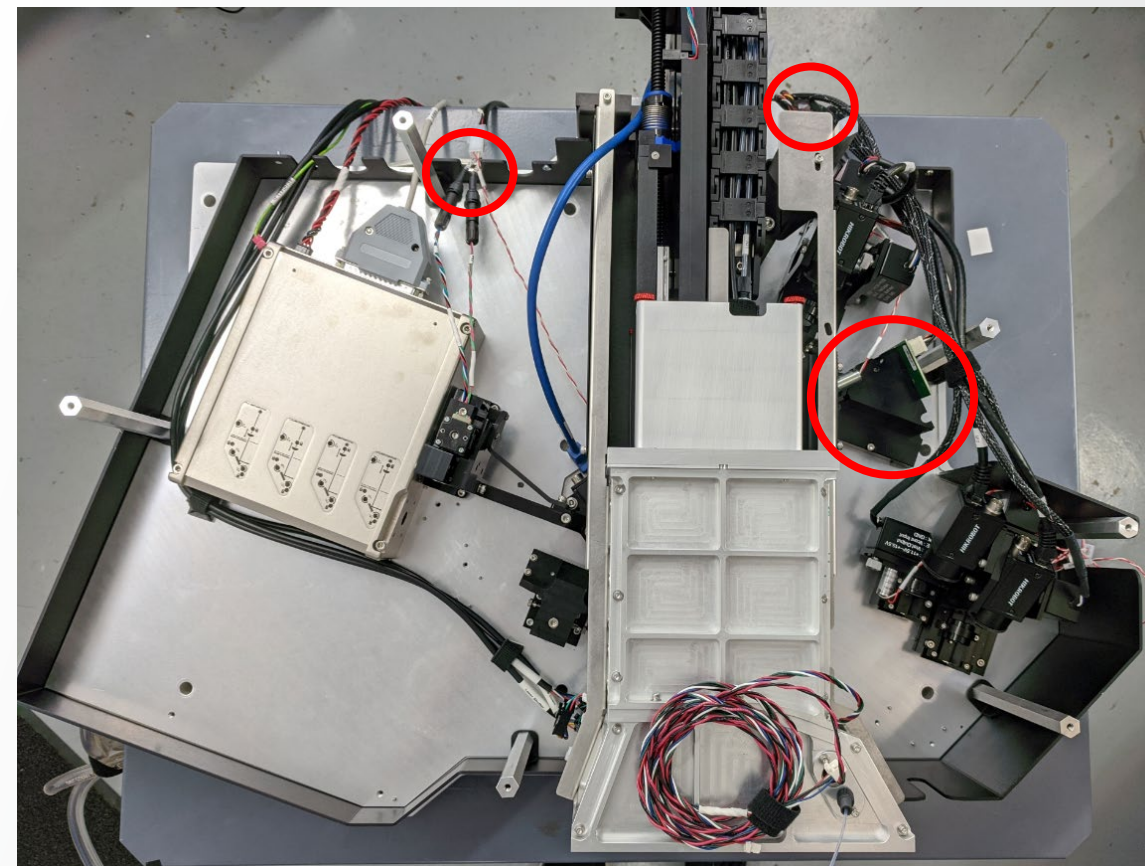
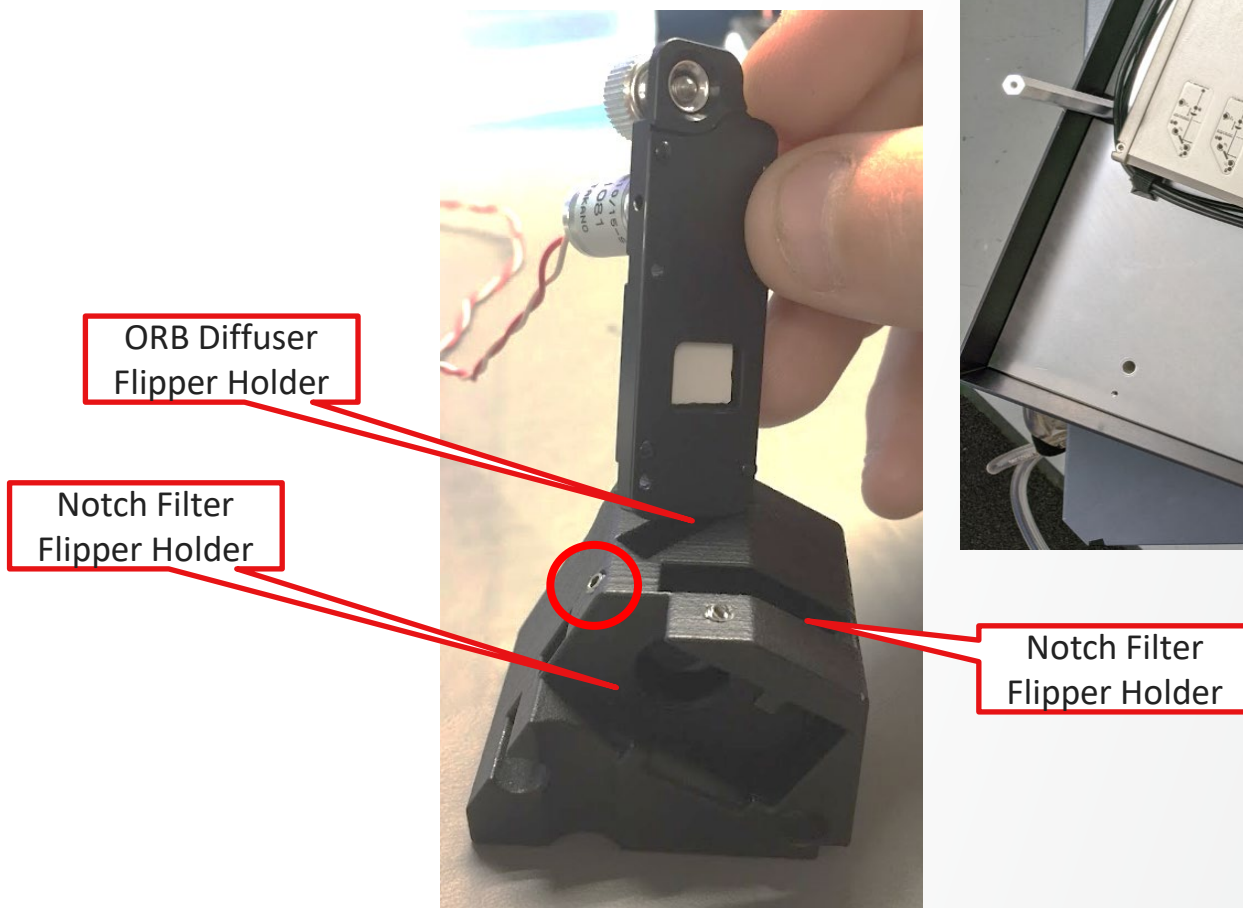
- |          |                                     |
|----------|-------------------------------------|
| <b>1</b> | Power instrument off.               |
| <b>2</b> | Remove Top Cover                    |
| <b>3</b> | Remove Collection side Laser Covers |



Collection Side

# Remove Flipper

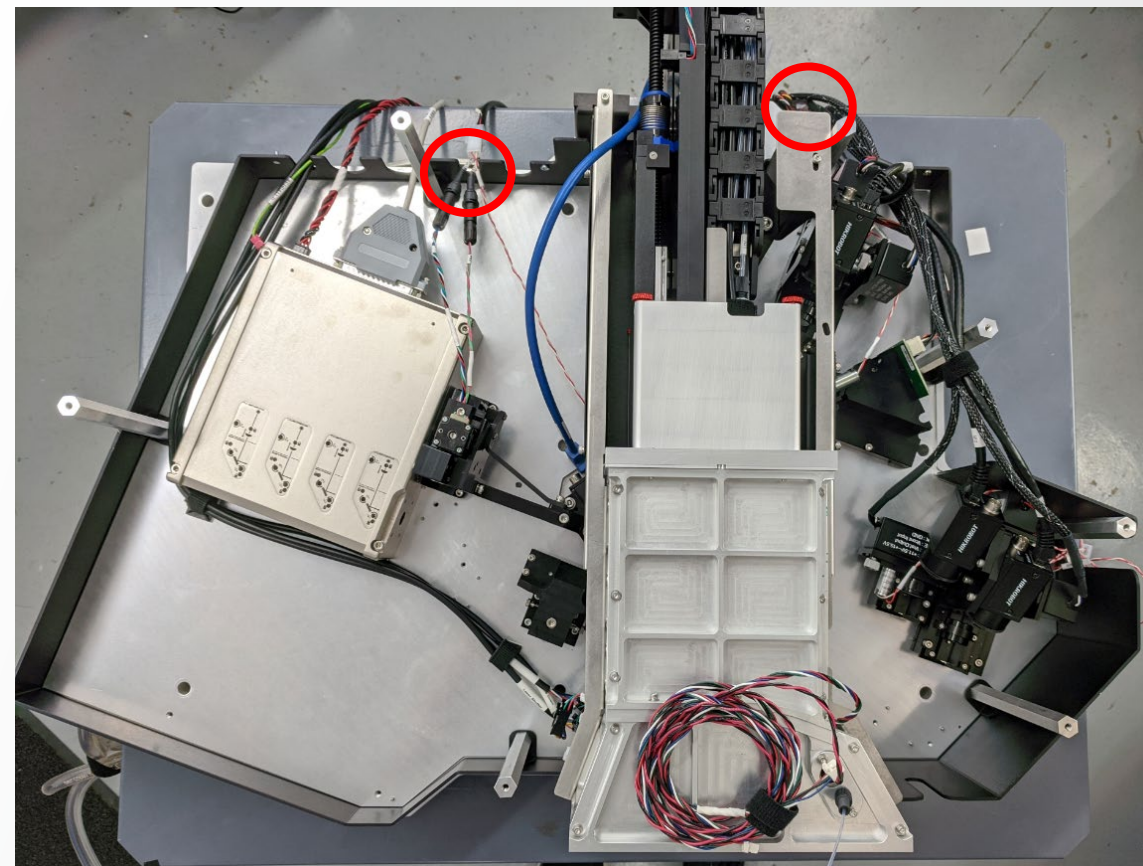
- |          |  |
|----------|--|
| <b>1</b> | Disconnect appropriate flipper cable.                              |
| <b>2</b> | Remove broken flipper by loosening set screw (with a 1.5mm blade). |



Notch Filter  
Flipper Holder

# Replace Filter

- |          |   |
|----------|---|
| <b>1</b> | Replace broken flipper and re-secure into mounting slot by tightening the set screw (with a 1.5mm blade until secure). Be sure to try and wiggle flipper for any extra movement. Flippers can and will back themselves out over time if not properly secured. |
| <b>2</b> | Re-connect flipper cable and reroute as it was before removal.  |
| <b>3</b> | Power on instrument.  |



# Test Flipper

- 1 Open the 'Optics' Menu from the Service Tool
- 2 Select flipper from dropdown menu and toggle to verify flipper is now working by listening for the solenoid to engage and watching the plots created on the next slides

Optics.vi

Lasers **Master Override**

Pwr	Light	Wavelength	Set	Now	Temp	A	hr	Sim
405	Set 100	Now 100 °C	28.9	A	0.11	hr	1795	Sim
488	Set 125	Now 125 °C	28.9	A	1.14	hr	1909	Sim
561	Set 120	Now 120 °C	28.9	A	1.11	hr	1776	Sim
640	Set 100	Now 100 °C	28.9	A	0.20	hr	770.5	Sim
349	Set 100	Now 100 °C	28.7	A	1.42	hr	233.5	Sim
445	Set 200	Now 200 °C	28.4	A	0.17	hr	624.5	Sim
532	Set 85	Now 0 °C	28.4	A	0.00	hr	080.5	Sim
594	Set 80	Now 0 °C	28.4	A	0.00	hr	949	Sim
785	Set 75	Now 75 °C	28.4	A	0.12	hr	1434	Sim

Laser Emission Warnings

Eye

Color Off Eps 1 200 Rate 0 Eps 2 3000 Eps 3 50000

Flipper

Toggle Value Override

Laser Delays

LD Not Centered Auto Off

Gaps 100 086 096 092 097 109

Zero Gap Set 0090 Avg 97 Auto

AreaScaler 0.021964 AllPmt Set 200

Droplet Camera Movement

Key Control Offset 0.30 Status Enabled mm Step 1 Max Travel 0.00 Loc 17 Home 0 #

Droplet Filter Filtered Freq Step 250 s(step) c(copy) 0 #

Optics.vi

Lasers **Master Override**

Pwr	Light	Wavelength	Set	Now	Temp	A	hr	Sim
405	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
488	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
561	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
640	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim
	Set 0	Now 0 °C	0.0	A	0.00	hr	0	Sim

Laser Emission Warnings

Eye

Color Off Eps 1 200 Rate Eps 2 3000 Eps 3 50000

Flipper

Droplet FSC ND FSC Polar ND FSC SPD ND FSC Polar Eye SSC ND SSC Polar ND Camera Power

Laser Delays

LD Not Centered Auto Off

Gaps 091 091 092 091 092 091

Zero Gap Set 0090 Avg 91 Auto

AreaScaler 0.008600 AllPmt Set 200

Droplet Camera Movement

Key Control Offset 1.30 Status Enabled mm Step 1 Max Travel 17.60 Loc 1.3 Home 0 #

Droplet Filter Filtered Freq Step 250 s(step) c(copy) 0 #

Bigfoot Service Tool

Basic Status Version 0.95 Lanch Pad

Warnings

No Errors

Revisions

PB:	944
SM:	055
FM:	213
BP:	017
LM:	166
BB:	061
OS:	027
TS:	101

Launch Pad

Default Plugin	Monitoring	Fluidic Testing	Configuration	Misc
Basic Status	Warnings	Instrument Test	Flash Data from Tsv	Laser Communication Lo
Subsystem Control	Grapher	Low Level Control	Adc Channel To Pmt	Gate Viewer
Setup	Monitor	Active Fluidics	Filter Viewer	Sort Stats
<b>Optics</b>	Watch & Export	Fluidic Schematic Control	Overrides	Compensation Transform
Loader	Laser Delay Scope	Low Level Read and Write	Fluidic Calibration	Data Monitor
Output	Status and Control	Memory Map	Bulk Fluid Cal	Runlist
Bio Hood	Charge Phase Viewer	Test Pattern	Update Firmware	Threshold Plot
Drop Delay Scope	Scope Viewer	ADC Test	Write Register Set	FCS Browser
Nozzle Mover	Documents	Fluidic Process Script	Write Flash	Efficiency Estimator Tool

Flipper

Droplet

Toggle Value Override

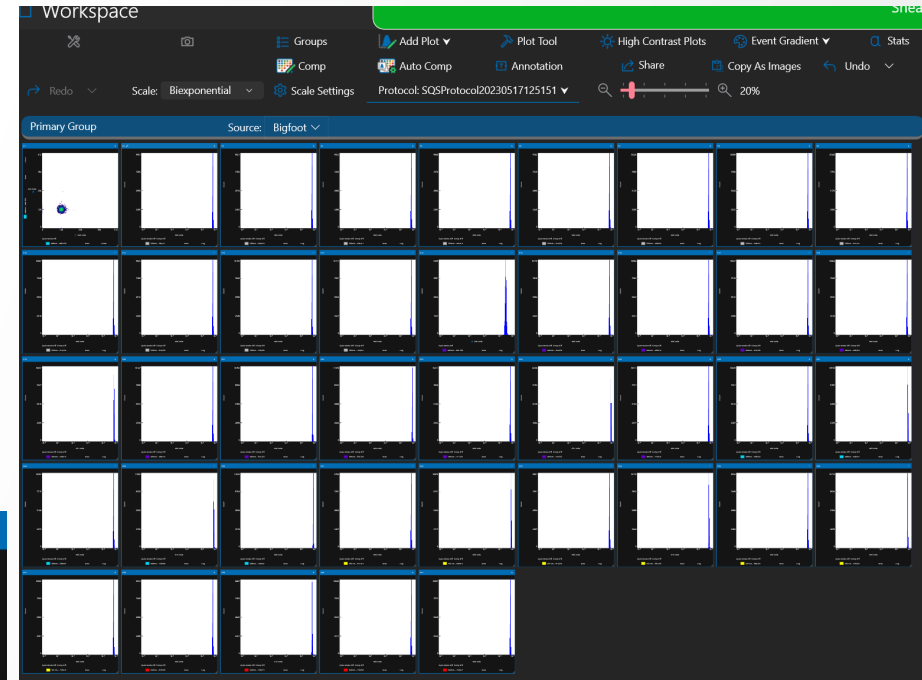
Flipper

Eye

Toggle Value Override

# Test Flipper

1	If you replaced the ORB Diffuser Flipper: Open SQS and login as Service and select Quick Run
2	Navigate to the Service Panel > General and click Acquisition Start and ORB On
3	Return to the workspace and use the plot tool to add all plots
4	In Service Tool Select Eye and toggle on/off while watching the plots, signal should significantly decrease when flipper is toggled
5	Click Acquisition Stop and turn off ORB



Workspace

Service Panel

General Cameras Output Media Definitions

Open Sort Door Close Sort Door

Data

\*\*Acquisition Start DATA ONLY\*\* \*\*Acquisition Stop DATA ONLY\*\*

Refresh

Disable acquisition/sort stop limits

Firmware Event Rate Limit  
125000

Flow Rate  
0.3

ORB  
 On

Event Rate  
200

Set ORB Voltages

Simulated Data On

Refresh Plot Images

List Active Plots

Plot Batch Tool Bigfoot

Area Log No Gate + All

Selected Plots X vs Y

Select Your X Parameter

360nm + All

387/11	420/10	434/17	455/14
475/20	509/24	549/15	577/15
615/24	670/30	730/39	750/LP

405nm + All

405 SSC	425/26	460/14	475/20
509/24	549/15	585/15	615/24
661/20	711/25	747/33	776/LP

488nm + All

488 FSC	488 SSC	509/24	549/15
600/52	720/60	750/LP	

561nm

Primary Group

Flipper

Eye

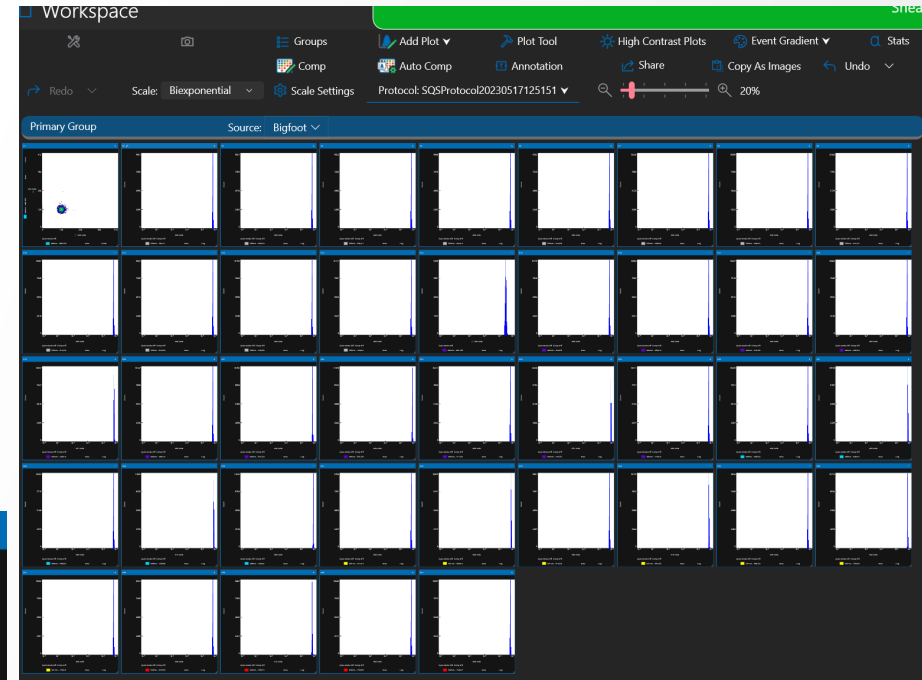
Toggle  Value

Override



# Test Flipper

1	If you replaced a notch flipper: Open SQS and log in as service and select Quick Run
2	Use the plot tool to add all plots
3	Run QC beads as a sample and examine the plots for the notch filter flipper you replaced.
4	In Service Tool > Optics Panel Select Notch 1 or Notch 2 and toggle on/off while watching the plots, signal for that laser should decrease when flipper is toggled



Workspace

Service Panel

General Cameras Output Media Definitions

Open Sort Door Close Sort Door

Data

\*\*Acquisition Start DATA ONLY\*\* \*\*Acquisition Stop DATA ONLY\*\*

Refresh

Disable acquisition/sort stop limits

Firmware Event Rate Limit: 125000

Flow Rate: 0.3

ORB: On

Event Rate: 200

Set ORB Voltages

Simulated Data On

Refresh Plot Images

List Active Plots

Plot Batch Tool Bigfoot

Area Log No Gate + All

Selected Plots X vs Y

Select Your X Parameter

360nm + All

387/11	420/10	434/17	455/14
475/20	509/24	549/15	577/15
615/24	670/30	730/39	750/LP

405nm + All

405 SSC	425/26	460/14	475/20
509/24	549/15	585/15	615/24
661/20	711/25	747/33	776/LP

488nm + All

488 FSC	488 SSC	509/24	549/15
600/52	720/60	750/LP	

561nm

Primary Group

FSC Polar

Eye

SSC ND

SSC Polar ND

SSC Polar

Laser Notch 1

Laser Notch 2

Camera Power

# Replace Covers

<b>1</b>	Replace Laser Covers.
<b>2</b>	Replace Top Cover.

