



Fractionation and Profiling Manual

MODEL
152
153

Triax Models
FC-1
FC-2
FC-3

SOFTWARE VERSION 2.00+
Manual Version v.1.01

© 2023 BioComp Instruments, Inc.
650 Churchill Row, Fredericton
New Brunswick, Canada E3B 1P6
Ph: (800) 561-4221, 902-956-4120
Email: sales@biocompinstruments.com
Home Page: www.biocompinstruments.com

SECTION 1. INTRODUCTION.....	3
1. Warranty and service.....	3
2. Electrical surge protection.....	3
3. Goods damaged in transit.....	3
SECTION 2. SPECIFICATIONS.....	3
1. Physical measurements.....	3
2. Commercially available parts.....	3
SECTION 3. PARTS DIAGRAMS - Coming soon.....	4
1. The Piston Gradient Fractionator.....	4
2. Air pump and needle valve.....	4
3. The piston valve, tip and seal.....	4
4. The rinse pump and purge system.....	4
SECTION 4. ORDERING INFORMATION.....	4
1. Please use our website, biocompinstruments.com or contact us at sales@biocompinstruments.com for systems and accessory quotes.....	4
SECTION 5. INSTRUMENT SETUP.....	4
1. We have made a series of videos to guide you through the setup process.....	4
SECTION 6. PROFILING.....	4
1. We have made a series of videos that cover gradient making, sample layering, centrifugation, fractionation and profiling. See below for written instructions on how to use our software.....	4
2. You can also refer to this quickstart manual.....	4
SECTION 7. PRACTICAL MANUAL.....	4
1. Here is our quickstart manual.....	4
2. Here is a video series covering much of the same material.....	4
3. Sample Layering.....	4
4. Centrifugation guidelines.....	5
5. Using SW60 and TLS-55 rotors.....	5
6. Triax - Coming soon.....	5
7. Setting up the Gilson to be controlled by our system.....	5
SECTION 8. MAINTENANCE AND REPAIR.....	6
1. Replacing the Rinse line check valve.....	6
2. Standard Valve assembly replacement.....	6
3. Valve repair.....	6
4. Adjusting air pressure.....	6
5. Changing the light bulb.....	6
6. Intensive Cleaning of the Triax.....	6
SECTION 9. SOFTWARE AND FIRMWARE UPDATES.....	6
SECTION 10. TROUBLESHOOTING.....	6
SECTION 11. UPDATED MANUAL.....	6

SECTION 1. INTRODUCTION

1. Warranty and service
 - a. BioComp has a policy of complete customer satisfaction. If, during the first thirty (30) days, you are unhappy with any of our products, you may return them for a full refund.
 - b. BioComp warrants all products to be free of defects in workmanship for a period of one year from the date of receipt. Liability is limited to repairs or replacement of the unit at BioComp's discretion. This warranty is in lieu of all other warranties either express or implied.
 - c. Claims against this warranty must be made by first contacting BioComp (sales@biocompinstruments.com). At this time the remedy will be determined. Units returned to BioComp without our knowledge and permission will not be accepted.
 - d. Claims for shortages or damage in transit must be reported to BioComp within ten (10) working days of the date of receipt. Such claims made after this period cannot be honored.
2. Electrical surge protection
 - a. As with any computer, voltage spikes and power surges can severely damage the sensitive chips in this instrument. You are strongly encouraged to purchase a surge protector from your local computer or hardware store and plug the PGF into it. Since surges and spikes can occur at any time, it is also wise to turn the unit off when not in use to reduce your instrument's exposure to them.
3. Goods damaged in transit
 - a. If the instrument or any of the accessories are damaged when you receive them, it is critical that you save the shipping carton(s) and contact us immediately. We will inform you of the return procedure and shipping addresses to put on the box. If the box is damaged to such an extent that returning the instrument in it would risk further damage, save the box for inspection by the shipper who will be notified to come and inspect it. Failure to adhere to these instructions will void any insurance claims we might seek and result in BioComp absorbing unnecessary expenses.

SECTION 2. SPECIFICATIONS

1. Physical measurements
 - a. Shipping Weight: 50-52 lbs.
 - b. Dimensions: 19.25"W x 16.5"D x 20"H (piston down), x 27"(piston up)
 - c. Operating temperatures: Ambient (Cold room only if left turned on in the cold room and for 1 hr after return to room temperature to prevent condensation)
 - d. Input Power: 120-240 VAC, 1.3A, 50-60Hz.
2. Commercially available parts
 - a. Stepper Motor: Hurst (Princeton, Indiana) TS -20 reduction cat no. SP3885
 - b. Air Pump: GAST (Benton Harbor, MI) #10D1-101-KGB
 - c. Water Pump: Greylor (Cape Coral, FL): #PQ-12DC
 - d. Liquid Crystal Display: Excel Technologies (Belle Meade, NJ) # ED 2420 SFBL
 - e. AC/DC DESKTOP ADAPTER 12V 80W, MEAN WELL USA Inc., # GST90A12-P1M
 - f. DC/DC CONVERTER 24V 26W, MEAN WELL USA Inc., # SD-25A-24

SECTION 3. PARTS DIAGRAMS - Coming soon

1. The Piston Gradient Fractionator
2. Air pump and needle valve
3. The piston valve, tip and seal
4. The rinse pump and purge system

SECTION 4. ORDERING INFORMATION

1. Please use our website, biocompinstruments.com or contact us at sales@biocompinstruments.com for systems and accessory quotes.

SECTION 5. INSTRUMENT SETUP

1. We have made a [series of videos](#) to guide you through the setup process.

SECTION 6. PRACTICAL MANUAL

1. Here is our [quickstart manual](#).
2. Here is a [video series](#) covering much of the same material.
 - a. Sample Layering
 - i. Careful sample layering is crucial for getting well resolved peaks.
 - ii. A how-to [Video](#) on Sample layering.
 - iii. A [PDF](#) with similar instructions.
 - iv. Sample layering has a significant impact on peak resolution. The table below demonstrates how the resolution of smaller features is lost with higher sample volumes.

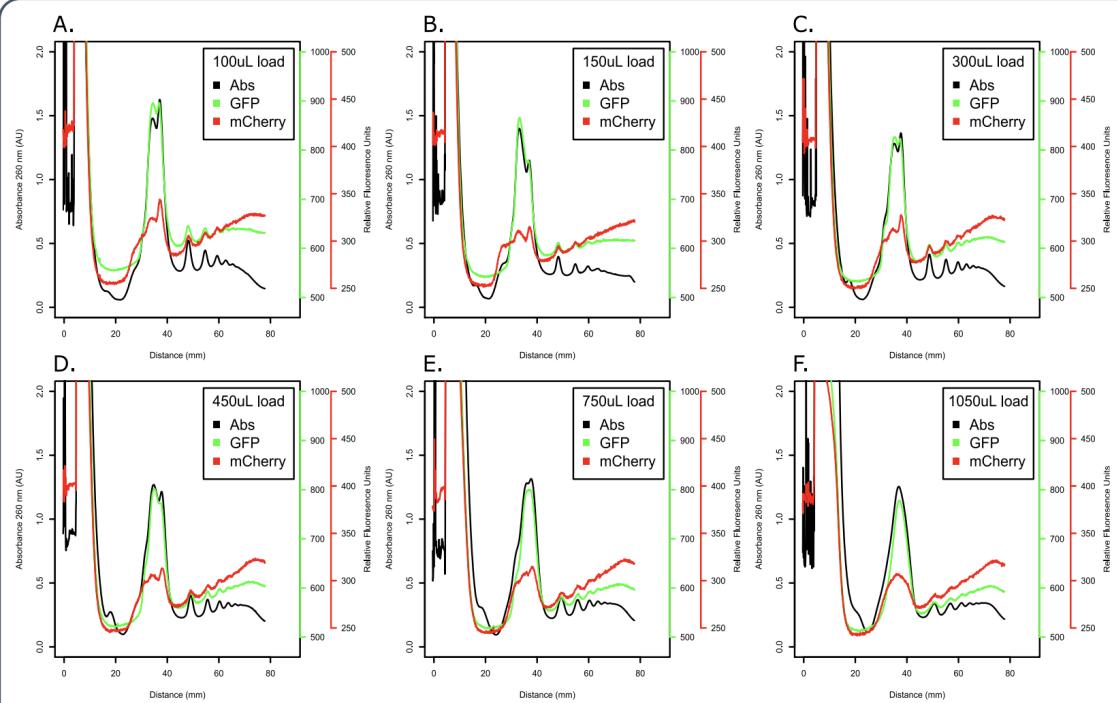


Figure 2. Impact of loading different sample volumes with same total mass of RNA on polysome profiling.

Fluorescent polysome profiles of 100 μL OD63 *C. elegans* rps-6(rns6[rps-6::mCherry]); juSi123 [rpl-29::GFP] lysate diluted with different amounts of lysis buffer. Lysate was diluted with A) 0 μL , B) 50 μL , C) 200 μL , D) 350 μL , E) 650 μL , or F) 950 μL lysis buffer for final loading volumes of 100, 150, 300, 450, 750, and 1050 μL , respectively. The absorbance from 260 nm is shown in black, the fluorescence from mCherry (RPS-6), and GFP (RPL-29) are shown in red and green, respectively. No blank subtraction has been applied.

3. Centrifugation guidelines

- We recommend always running the centrifuge at the maximum possible speed. This minimizes the time the centrifuge runs which reduces the negative impact of diffusion on peak resolution.
- This formula can be used to calculate the time of centrifugation required to get the same sedimentation at different speeds.

$$T_1 \times V_1^2 = T_2 \times V_2^2$$

- For example the same sedimentation will be achieved by running the SW41 rotor for 3 hours at 32 000 rpm as a 1.83 hour run at 41 000 rpm.

4. Using SW60 and TLS-55 rotors

- [This Video](#) shows how to swap the 11 mm piston with the standard piston used for all other tube sizes.
- The rinse adaptor does not fit on the 11 mm piston. Follow [these instructions](#) for an alternate method.

5. Triax - Coming soon

- [Swapping fluorescence filter sets](#)
- [Swapping UV LEDs](#)
- [Replacing a LED in the Triax](#)

6. Setting up the Gilson to be controlled by our system.

- Follow this [section of video](#).

7. Manual Use - Using the Fractionator without the Triax

SECTION 7. MAINTENANCE AND REPAIR.

1. Replacing the Rinse line check valve
 - a. [Video](#)
2. Standard Valve assembly replacement
 - a. [Video](#)
3. Valve repair
 - a. [Use this manual](#)
4. Adjusting air pressure
 - a. See [here](#).
5. Changing the light bulb
 - a. [Video](#)
6. Intensive Cleaning of the Triax
 - a. Set the on time to 10.
 - b. Record the sample value with water in the flow cell.
 - c. Put 20mL of 1% SDS in the rinse reservoir on the right side of the instrument.
 - d. Hit the Rinse(2) button on the control panel until all of the 1% SDS has been pumped out of the reservoir.
 - e. Put 10mL of water in the rinse reservoir on the right side of the instrument.
 - f. Hit the Rinse(2) button on the control panel until all of the water has been pumped out of the reservoir.
 - g. Record the sample value
 - h. If the sample value is higher than the last cycle, repeat these steps.

SECTION 8. SOFTWARE AND FIRMWARE UPDATES

1. [This document](#) has the instructions and download links necessary to update the firmware on the Fractionator and the software on the PC to the latest versions.

SECTION 9. TROUBLESHOOTING.

1. See our [Troubleshooting Guide](#)

SECTION 10. UPDATED MANUAL

1. You may find a newer version of the manual [here](#).
2. Click the link above and compare the version number to the first page of this manual. If it is a higher number then you can download it as a PDF or use the google doc version.

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