

# Operator's Manual



## The Bullet Blender<sup>®</sup> with BioBox

## Congratulations!

Congratulations on your purchase of a Bullet Blender® with the integrated BioBox by Next Advance, Inc., for mixing, lysing, disrupting, and homogenizing your samples. It comes with beads of several sizes and materials, a sample bag of tubes, a spatula, an extra rubber gasket, and vacuum grease.

**Warning:** With this model, use only Axygen® brand 1.5 mL polypropylene conical bottom screw top tubes. The secondary enclosure is not a substitute for safe and careful laboratory practices. All people using the Bullet Blender® should be trained in and using safe and good laboratory practices.

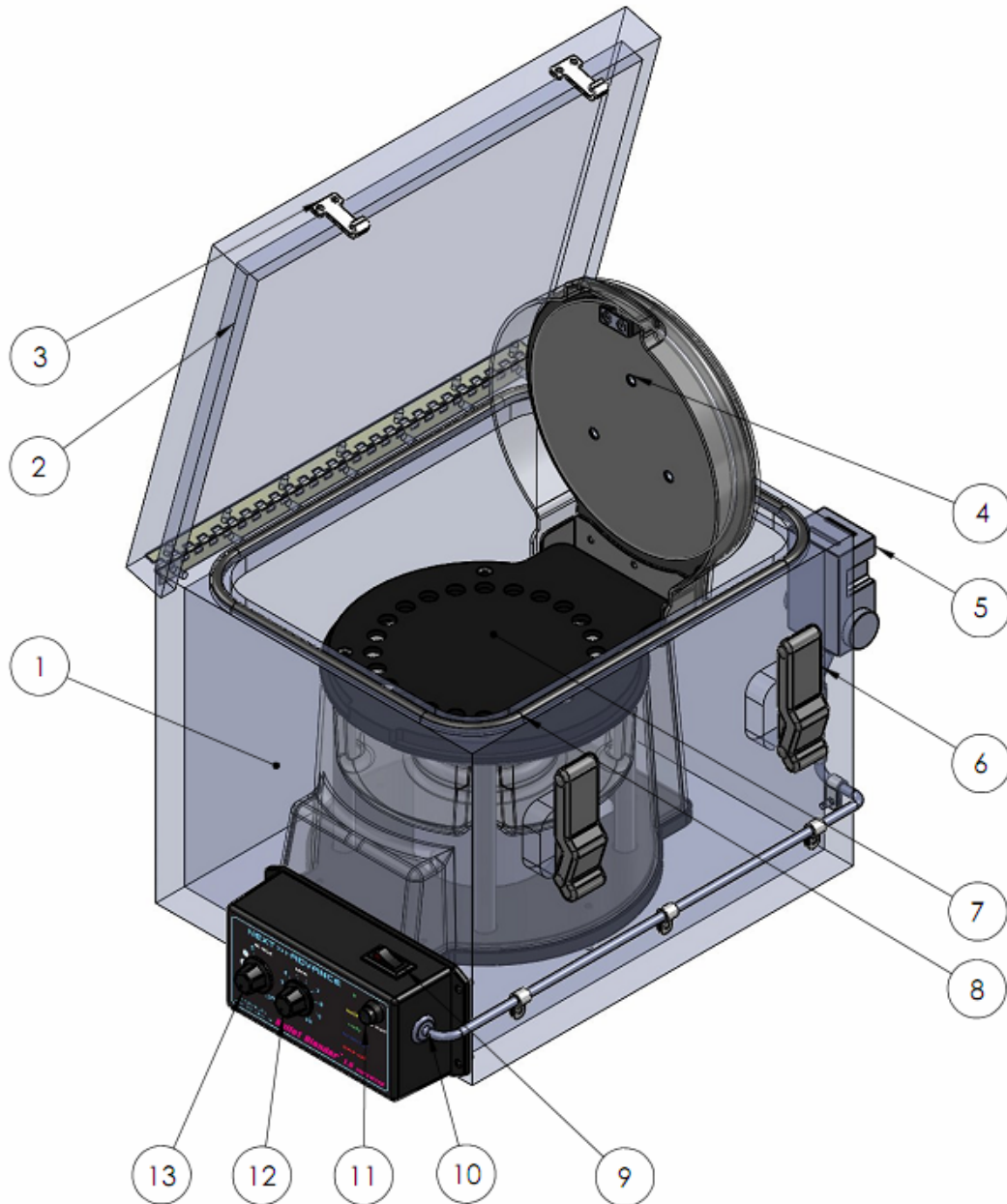
This operator's manual explains proper operation of the instrument. This manual is also posted on our website, [www.nextadvance.com](http://www.nextadvance.com). Click on SUPPORT in the left panel and then on the appropriate link to the manual.

We're confident that your Bullet Blender® will become an essential tool in your laboratory and we wish you success with your work.

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## Parts of the Bullet Blender<sup>®</sup> in the BioBox



- |   |                            |
|---|----------------------------|
| 1) BioBox Enclosure                           | 8) Seal                    |
| 2) BioBox Cover                               | 9) Emergency Stop Switch   |
| 3) Latch Keeper                               | 10) Electronics Power Jack |
| 4) Bullet Blender <sup>®</sup> Contact Gasket | 11) Start Button           |
| 5) Power Interlock                            | 12) Speed Control Knob     |
| 6) Latch                                      | 13) Time Control Knob      |
| 7) Sample Tube Plate                          |                            |

## SETUP

Place the Bullet Blender<sup>®</sup> with the integrated BioBox enclosure on a stable, level surface in a flow hood. Plug the power supply into the back of the Bullet Blender<sup>™</sup> BioBox and then plug it into a power outlet. It is now set up.

## OPERATION

To use your Bullet Blender<sup>®</sup>, open the latches on the right side, open the enclosure cover, and then open the lid of the Bullet Blender<sup>®</sup>. Insert the samples in the appropriate tubes: Axygen brand screw cap conical bottom, polypropylene 1.5 mL tubes. (Other tubes may work, but results may vary and the tubes may not be as tough or seal as well. Please check with us before using other tubes.). **The threads on all screw-cap tubes must be dry and the caps must be screwed on very tightly. Use a minimum of three tubes per round of homogenization.** For best results, the tubes should be evenly spaced.

Close the lid of the Bullet Blender<sup>®</sup>. Then check the rubber ring which seals the secondary enclosure. Dirt, dust, scuff marks or cuts in the rubber ring may prevent the enclosure from sealing air tight. If the rubber ring is dirty, wash it off with mild soap and water. If it is questionable, order a replacement part kit (includes rubber ring and check valve, cat no. GBIOX). **OPTIONAL:** Apply vacuum grease sparingly inside of the groove to prevent the gasket from becoming dislodged when the lid of the BioBox is opened. The use of the vacuum grease is optional and it will not

affect the functionality of the BioBox enclosure.

Close the cover of the secondary enclosure. You should see a series of green lights on the left side of the control panel. Once the green lights on the left are off, you are ready to run the Bullet Blender<sup>®</sup>. The small green light near the top right of the control panel indicates that the power is on. Set the duration, in minutes, and the speed to the desired value. Push the start button. The word “sealing” lights up in yellow as some of the air is pumped out of the secondary enclosure. This is done to reduce the air pressure inside the secondary enclosure, so that if there is a leak, air will leak into the secondary enclosure rather than any air or contaminants inside the enclosure leaking outward. Once the word “ready” lights up in green, the Bullet Blender<sup>®</sup> will start homogenizing your samples for the number of minutes you have selected. The green LED’s on the left indicate how many minutes have passed.

**The pump exhausts air directly from the enclosure at the start of each run; so when running the unit multiple times, be sure to verify tube integrity and the absence of contaminants, before running again.**

**A syringe filter can be added to the exhaust pump of the BioBox. Fasten a “luer lock” syringe filter (2 micron) to the check valve located on the inside wall of the BioBox.**

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## Example:



*This figure shows the Bullet Blender<sup>®</sup> with BioBox set to run for 4 minutes at a speed of 8, after running for 2 minutes.*

To operate, press the “START” button. After the BioBox is finished sealing and the Bullet Blender<sup>®</sup> has run for the first minute, the LED light by the number 1 will light up. After the second minute, the second LED light by the number 2 will light up. And so on. The figure above shows that more than 2 minutes have elapsed and that after 4 minutes, the Bullet Blender<sup>®</sup> will stop. In the Blue versions, the words “Air Cooling™” will light up in blue during operation, indicating that the fan is running.

Do not operate the Bullet Blender<sup>®</sup> using the same tubes for longer than 15 minutes.

Before opening the cover of the enclosure, visually check that the sample tubes are in tact and that there is no leakage. **In case of contamination, encapsulate the entire unit before transporting. Do not autoclave.**

If the red “check seal” lights up when not running the Bullet Blender, see the recommendation in the section titled “Troubleshooting”. If “check seal” lights up during a run, then the power to the motor is turned off. If it is safe to open the secondary

enclosure you may do so. Inspect the seal as described in the section titled “Troubleshooting”. If there is a chance of contaminants leaking out, encapsulate the entire unit before transporting it to a place for decontamination.

## PROTOCOLS AND SAMPLE SETTINGS

For guidelines involving the use of various beads/buffer/sample ratios as well as specific protocol information, please refer to our website [www.nextadvance.com](http://www.nextadvance.com) and / or the instructional DVD.

As the tissue amount becomes smaller, that ratio will differ due to the limitations of handling of the small volumes. We recommend using a minimum of 30µL of buffer regardless of your sample size.

The maximum sample mass is 300mg of tissue or 300µL of cell culture per microcentrifuge in the Bullet Blender<sup>®</sup>. Do not fill the tubes with a volume greater than 1.2ml (this includes sample, beads, and buffer). This is because the mechanics of homogenization require empty space in the tube.

Cutting the tissue into smaller pieces will generally yield better results. As a general rule, best results will be achieved when cutting the tissue into sections that are ½ of the maximum size or less. Tissue with a high aspect ratio (long, thin strips) will homogenize better than tissue that is round or cubic.

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Protocols for many types of samples are posted on our website. Please visit [www.nextadvance.com](http://www.nextadvance.com)

## Notes:

At high speed settings there may be some flaking of the tubes. This is normal and intentional. The higher speed enables homogenization of tougher tissue.

Because the energy in the Bullet Blender is divided among the samples, rounds with over 12 samples and rounds with larger sample volumes may require additional time to homogenize.

The Bullet Blender<sup>®</sup> and BioBox are transparent so the user can visually verify whether sample tubes are in tact or if there are leaks or breakage.

## CONTAMINATION

If you think there is a chance that contaminants have escaped from the sample tubes, turn unit off using the “Emergency Stop Switch”, unplug unit from power, encapsulate the entire unit to prevent contaminants from leaking out, and then decontaminate the Bullet Blender per safe and standard practice. Do not autoclave.

## CLEANING

If you wish to clean your Bullet Blender and BioBox, clean the inside and outside of the BioBox and the outside of the Bullet Blender<sup>®</sup> housing with mild soap water and a soft cloth. **Do not let the electronics get wet.** Under normal conditions, the Bullet

Blender<sup>®</sup> does not need to be disassembled for cleaning. In the case of a large spill or excessive build-up of flake particles, unplug the instrument, remove the sample tube plate (item 7 page 3) with a Phillips screw driver, wipe out the spill from the catch basin using standard laboratory safety precautions, and replace the sample tube plate. **Do not touch or tamper with the electronics.**

## TROUBLESHOOTING

In addition to the tips given below, a thorough list of troubleshooting tips is available on our website.

[www.nextadvance.com](http://www.nextadvance.com)

**If nothing happens,** the power supply plug may not be in a live wall outlet or the power supply connector plug may not be fully inserted into the jack on the back of the Bullet Blender<sup>®</sup>. If the unit's power light indicator is still unlit verify the correct provided power supply is being used.

**If “check seal” lights up in red,** the pressure inside the secondary enclosure is no longer lower than outside the enclosure. If this happens after the enclosure has been sealed for several days, simply open and close the enclosure cover to reset the system. If this happens in a matter of minutes or seconds, then there is a leak in the enclosure. Clean the rubber ring seal if it is dirty or replace it and the check valve if it is damaged, and try again. Do not try to use the Bullet Blender<sup>®</sup> if the enclosure is not properly sealing.

**If the unit stops working,** turn the

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system off for 1 hour with the lid open to allow the electronics to cool down and reset. If the Bullet Blender<sup>®</sup> does not turn on after this period, contact customer service.

**If the caps on the microcentrifuge tubes loosen**, make sure that the screw threads on the tubes and caps are dry when you screw them on, so that there is enough friction for the caps to remain tight. Using recommended types of tubes will minimize cap failure.

## SUPPORT

FAQs, protocols, and other helpful information are available on our website, <http://www.nextadvance.com>. Click on the Bullet Blender, then on the appropriate link.

If you cannot find an answer online, please contact customer service by email at [support@nextadvance.com](mailto:support@nextadvance.com) or by telephone at 1.518.674.3510 or (800) 738-1681.

## SPECIFICATIONS

Size: Bullet Blender with BioBox: 16 in. (40.6 cm) deep x 16in (40.6 cm) wide x 11 in. high (27.9 cm), 23 in. high when opened (58.4 cm).

Weight: 24 lbs (11 kg).

Power Requirement: 24 VDC, 0.75 Amp

Capacity: 24 of 1.5 mL polypropylene conical bottom screw cap tubes, Axygen brand.

Relative Humidity: 5 - 90% non-condensing

Operating Temperature: 4 - 50°C

Storage Temperature: -40 to 50°C

The Bullet Blender<sup>®</sup> electronics, but not necessarily those of the enclosure, meets **CE** requirements (-CE models only).

## WARRANTY

The Bullet Blender<sup>®</sup> comes with a two year warranty on parts, but not labor. Due to the hazardous nature of the typical environment in which this product is used, we cannot offer a 30 day money back guarantee nor cover labor on the warranty. There is a 3 year warranty on the motor. Next Advance will replace, free of charge, any part which is defective due to workmanship or materials.

For further information, go to [http://www.nextadvance.com/legal\\_terms.htm](http://www.nextadvance.com/legal_terms.htm).

### Warranty is void if

The warranty is void if the Product is defective due to product accident, product modification, exposure to radiation other than for sterilization, connection to an improper electrical supply, lack of proper maintenance, contamination, improper installation or misuse. The warranty shall also not apply to defects arising from fire, flood, lightning or other conditions unrelated to correct operation of the Product.

Next Advance's liability is limited, at the company's election, to (1) refund of the original purchaser's purchase price for the Product (2) repair of the Product, or (3) replacement of the Product or defective parts. Evidence of purchase by the original purchaser is required. Next Advance may

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also request documentation of proper maintenance, if applicable.

Next Advance makes no other warranty, express or implied, with respect to its Products. NEXT ADVANCE MAKES NO WARRANTY RESPECTING THE MERCHANTABILITY OF THE PRODUCTS OR THEIR SUITABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR USE. Next Advance shall not be liable for, indirect, special, incidental or consequential damages of any nature. Any recovery for any claim shall be limited to the original purchase price for the product.

### WARNINGS AND CAUTIONS

Read the user's manual before operating.

Do not operate Bullet Blender<sup>®</sup> with BioBox units with fewer than 3 tubes.

Do not open lid when Bullet Blender<sup>®</sup> is in use.

Do not insert fingers or objects other than recommended tubes into sample tube holes.

Use caution when closing Bullet Blender<sup>®</sup> lid- do not close on fingers.

Use recommended tubes only.

For indoor use only.

Pollution Degree 2 per EN 61010-1.

Sound Pressure Level: the Bullet Blender with BioBox is quiet (approximately 72 dBA at 2 feet – depending upon conditions) and does not require hearing protection.

Do not immerse in liquid.

Before touching the Bullet Blender<sup>®</sup>, touch a bare metal surface to discharge static

electricity.

### DISCLAIMER

Next Advance, Inc. makes no representations or warranties, expressed, statutory or implied, regarding the fitness or merchantability of this product for any particular purpose. In no event shall Next Advance be liable for incidental or consequential damages. Next Advance, Inc. is not liable for any damages, including but not limited to, lost profits, lost savings, or other incidental or consequential damages arising from ownership or use of this product, or for any delay in the performance of its obligations under the warranty due to causes beyond its control.

The BioBox is not a substitute for good laboratory practice and is not guaranteed to prevent the spread of contamination.

Next Advance, Inc. also reserves the right to make any improvements or modifications to the product described in this manual at any time, without notice of these changes. Next Advance, Inc. products are not designed, intended, or authorized for use in applications or as system components intended to support or sustain human life, as a clinical medical device for humans, or for any application in which the failure of the product could create a situation where personal injury or death may occur.

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