

Instruction Manual

BeadBlaster™ 96

IPD9600

Ball Mill Homogenizer



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Foreward

Thank you for purchasing a Benchmark BeadBlaster™ 96 Ball Mill Homogenizer for Tubes, Plates and Jars. This manual contains instructions for the proper operation and care of this instrument. Please read it carefully before operation of the BeadBlaster 96 and keep it for future reference.

Please check the instrument and accessories when you first open the shipping carton. Report any damage, discrepancy or missing items immediately to the supplier. Any shipping damage is the responsibility of the transportation carrier. Please keep any damaged packaging until a claim has been filed.

Included in this package, in addition to the manual, should be the instrument, power cord, wrenches for opening jars and allen key for removing the shipping screw in the bottom of the unit. If any of these are missing, please contact Benchmark Industrial Products. Any ordered accessories may ship separately.

Before use check that the proper power cord has been received and that the voltage rating on the back of the unit matches the local voltage requirements.

Benchmark reserves the right to make technical improvements to the system without prior notice.

The BeadBlaster 96 is for research use only.

If you have questions or need technical support, please contact us:

Benchmark Industrial Products

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1.0 Introduction

The BeadBlaster 96 is a bead mill homogenizer useful for grinding samples for a variety of applications in the fields of biology, chemistry, pharmacology, mineral science and others. It can reduce samples to micron size particles in a very short period of time. A variety of grinding jars and adapters are available to accommodate a range of sample types and sizes.

Features:

- Simple user interface
- Homogenize samples in 96 well plates, 2ml tubes, 50ml tubes and large capacity grinding jars
- Suitable for use with a wide array of sample types
- Cryogrinding is possible with the stainless steel jar accessories
- Designed with safety in mind - run stops automatically if the cover is opened

2.0 Safety

Read this manual thoroughly before powering up the instrument. Pay special attention to the guidelines and directions below and be familiar with all safety warnings.



The operation, maintenance and repair of the instrument should comply with the basic guidelines and safety warnings below. Noncompliance may interfere with the usable life of the instrument and safety protection. It may also void the warranty.



Use this product indoors. Do not operate in a damp or wet environment.



This instrument is designed for use in a laboratory environment and must be operated by skilled personnel with the appropriate training.



Before operation, check that the voltage rating on the instrument matches your local voltage. The rated electrical load of the supply should not be lower than that of the instrument's demand. Do not place the power cord where it will have objects placed on it or be walked on. When unplugging the instrument, do not pull the plug out of the socket by the cord. Replace damaged power cords. .



Before installation, be sure to remove the shipping screws from the bottom of the instrument. Operating the instrument with these in place can result in damage to the instrument. If the instrument needs to be moved, the screws should be replaced in the bottom of the instrument to stabilize the motor.



Install the instrument in a cool, dry location free of dust, direct sunlight or strong lights. The instrument should be placed away from corrosive gases, strong magnetic fields and heat sources. Allow at least 4 inches on all sides of the instrument for proper air circulation. Be sure that the air vent on the rear of the instrument is not blocked. If setting up multiple units, they should be 3 feet apart.



The power switch is located at the rear of the instrument. After use, the power to the instrument should be turned off. If the instrument will not be used for a long period of time, it should also be unplugged and covered with a cloth or plastic to keep it free of dust.



If samples are processed for an extended period of time, many cycles or without a pause between cycles, thermal breakdown of the sample vessel may occur. Follow manufacturers guidelines.



The instrument should be unplugged immediately and the supplier contacted in the event of:

- Liquid leaking into the instrument
- Smoke or fire
- Abnormal operation such as abnormal sound or smell
- Instrument being dropped or outer housing damaged



Do not attempt to open the cover while the unit is in operation. Defeating the safety aspects of the system can result in injury. Benchmark is not responsible for injury caused by improper operation of the instrument.



Before starting operation, be sure that the adapters or grinding jars are firmly lock into place and balanced.



Take care when working with liquid nitrogen. Wear protective gloves and goggles to prevent injuries to the skin and eyes.



Only the stainless steel grinding jars can be used with liquid nitrogen. Other accessories are not designed for this use.



Do not use any fittings or accessories that are not recommended by Benchmark. Doing so may damage the instrument and void the warranty.

3.0 Maintenance

The BeadBlaster 96 requires no routine maintenance. To keep the unit clean, wipe down occasionally with a clean, soft cloth. Do not immerse the unit or pour liquids on to it.

Always disconnect power to the unit before any cleaning procedure. Do not apply cleaning solutions directly to the unit or the accessories. Do not use corrosive agents while cleaning.

4.0 Specifications

Spe2.2	180 to 1800rpm in 100rpm increments
Ambient operating temp.	4°C to 40°C
Cycle duration	1 second to 59 minutes, 59 seconds
Pause	1 second to 59 minutes, 59 seconds
Number of cyclers	99
Number of programs	20
Dimensions (WxDxH)	335mm x 500mm x 365mm
Weight	64 kg
Electrical	120V, 50/60Hz or 220V, 50/60Hz, 150W, 2.2A
Warranty	2 years

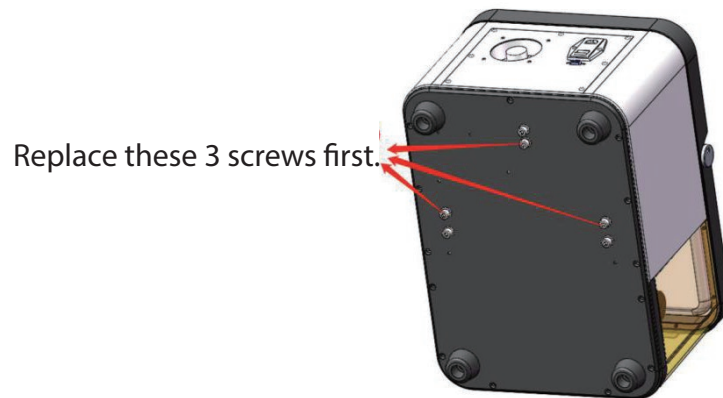
5.0 Installation

The BeadBlaster 96 is shipped with 6 transportation screws in place to stabilize the motor (see image). These must be removed before use with the supplied wrench. Keep these screws in case the machine needs to be

transported in the future.



If the BeadBlaster 96 needs to be shipped or transported over a long distance, the screws should be replaced for transit. The 3 screws shown in red, below, should be replaced first, tightened, then the other 3 screws.



Locate the unit on a steady laboratory bench, near a grounded electrical outlet. Plug the supplied power cord into the back of the unit and plug the other end into the wall socket.

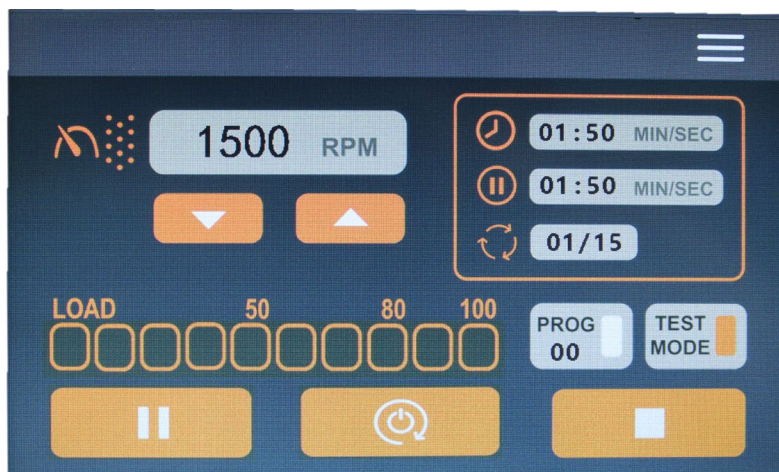
6.0 Operation

Note: the instrument and accessories are fully tested before shipment. Therefore there may be some slight scratches on the parts that rub together such as the holders and adapters. This is normal.

Identify the parts of the instrument as show in the images on the following page. Once the instrument is set up and plugged in, turn on the power switch located at the back of the instrument.



When power is turned on, the display will show the home screen, below:



The home screen shows the current set parameters, lid status and load status. It is also where runs are started and stopped. Touch the parameter box on the right side of the screen to enter the set screen:

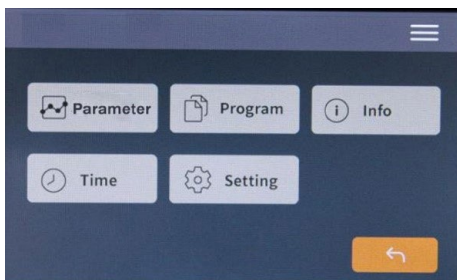


The current set parameters are shown. To change a parameter, touch the value field next to the name of the parameter and then use the keypad to change the value. To save the values, press the file folder icon. Press the back arrow to return to the main menu and start a run.

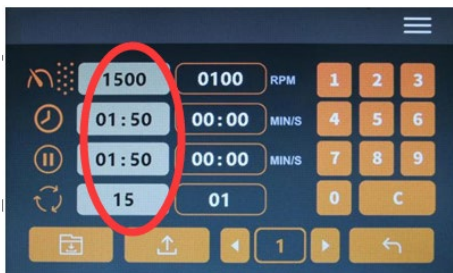
By pressing "test mode" on the home screen, the speed can be changed using the up and down arrows. Pressing the arrow once changes the speed by 100rpm.

Programming

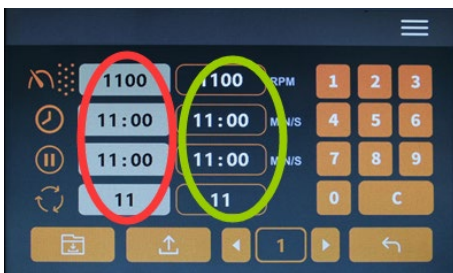
Operational values can be entered into a program and recelled as needed. To enter values and save as a program, touch the menu bars on the top right hand side of the home screen.



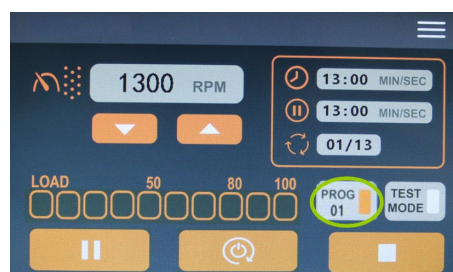
This menu will appear. Touch Program to enter the programming screen. Alternatively, from the home screen, press the "PROG" icon.



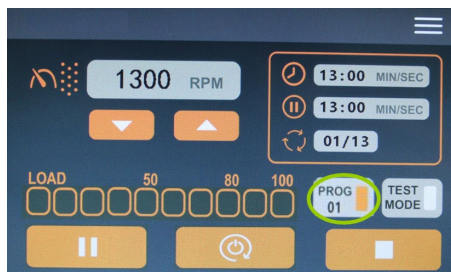
Program screen: use the left and right arrows at the bottom of the screen to select a program number. That program will appear on the screen. Touch the area circled in red to adjust the parameters. Once the parameters are selected, press the file folder icon to save the program. A confirmation screen will appear - press the check mark to save.



To load a program, select the program number from the bottom of the screen and press the up arrow. The numbers circled in red and the numbers circled in green will match. Return to the home screen using the return arrow at the bottom right hand side of the screen.



The home screen will now show the selected program number in the program area. Press the start button in the bottom middle of the screen to start the program. A confirmation screen will appear. Press the check to start the program and the X to cancel. Once the unit starts to run, the cooling fan will also begin to operate.



Operation of the unit will cease when the entire program has run. To stop the operation before that time, press the stop icon twice (box at the bottom of the screen, right side). Pressing the button once will pause the machine. Press the start key to resume.

To pause operation, press the pause icon on the lower left side of the screen (parallel lines). The fan will continue to run while the unit is paused. To resume, press the start key, or press the stop key to stop.

The BeadBlaster 96's lid features a safety switch. If the lid is in the open position, operation will not start. If the lid is opened during a run, operation will cease. If the unit is overloaded, operation will cease and will need to be restarted manually.

8.0 Loading Samples

Sample containers must always be loaded in pairs. Do not use containers that are not supplied by Benchmark and are not designed for the BeadBlaster 96.

Place the sample jar or adapter in the clamp, making sure that the raised, round part of the adapter or end of the jar is seated firmly into the clamp. The supplied wrenches may be used to seal and open the jars. Use one on each side and the jar and turn in opposite directions.

Lift the locking bolt, rotate it 90 degrees, and then lower. This will unlock the black handwheel. Turn the wheel to secure the adapter or jar in place. If the wheel is making a clicking noise, it is locked. Rotate the bolt again. The wheel should be hand tight. Rotate the locking bolt 90 degrees again to lock. Turn the wheel. A clicking noise should be heard.

Close the lid. The instrument is now ready to be started. To remove the sample, simply reverse the process above.

9.0 Cryogrinding

The stainless steel jars may be used for cryogrinding with liquid nitrogen. Place sample in jar and seal. Immerse the jar in liquid nitrogen to freeze, then carefully remove and place in the clamps in the BeadBlaster 96. Use the wrenches to open the jar.

Use care when working with liquid nitrogen. Always wear gloves and protective eye wear.

10.0 Accessories

Grinding Jars

25 and 50ml grinding jars are available for the BeadBlaster 96. Sample volume for the 25ml jar is 4-10ml with a maximum feed size of 6mm. One 10mm steel bead can be used in each jar. Sample volume for the 50ml jar is 8-20ml with a maximum feed size of 8mm. One 25mm bead can be used in each jar.

Grinding jars and balls can be cleaned in water with a mild detergent. Rinse well and wipe dry with a clean cloth. The jars may also be dried in a 180°C oven.

Inspect the gaskets on the jars after each use. Damaged gaskets should be replaced.

Adapters

Adapters are available for 96 well plates, 2ml tubes and 50ml tubes. Various grinding media is available. Visit www.benchmarkscientific.com for details or call 908-769-5555.

A variety of accessories are available for the Benchmark 96. Additional accessories may also be available on our website, www.benchmarkscientific.com.

IPD9600-96 Adapter for 96 well plate, set of 2
IPD9600-25S Stainless steel grinding jar, 25ml, set of 2
IPD9600-25G Replacement gasket for above jar, each
IPD9600-50 Stainless steel grinding jar, 50ml set of 2
IPD9600-50G Replacement gasket for above jar, each
IPD9600-50T Adapter for 4x50ml tubes, set of 2
IPD9600-25BS Stainless steel grinding ball, 25mm, each
IPD9600-50BS Stainless steel grinding bal, 10mm, 500g
IPD9600-CK Cryo Kit, contains bucket, gloves, goggles and tongs

11.0 Troubleshooting and Repair

Should your BeadBlaster 96 need service or you have questions about the operation, please contact Benchmark via email at info@benchmarkscientific.com or call 908 769-5555.

