



**MENSSANA**  
RESEARCH, INC.

## **BCA User's Guide**

last revised 13 November 2011

**IMPORTANT:**

**Never touch the ends of either sample trap with bare fingers.** The traps should always be held so that the ends of the traps remain clean. Oils from fingers will be seen in the analytical system and could interfere with results.

**The samples should be shipped as soon as possible.** If they must be stored for a day or two, refrigerate them. Ship samples by FedEx Express to the lab for analysis. If the samples were collected on a Friday, they can be refrigerated and shipped on the next business day. Samples should be packed securely in bubble wrap to ensure that they will not move or be banged around in the package in transit.

**Please do not attach labels to the collection traps,** since they cannot go into our thermal desorber oven that way. Attach all labels to the paperwork and inside surface of your shipping bag only.



1. Set up the BCA on a stable surface (such as a tabletop or countertop).



2. Take the bracket which swings across the front of the BCA, and put it in the down position, so that it is resting on the table or counter and tilting up the BCA display towards you. You will need to push the bracket pin to release the bracket so that it can move.



3. Put the reservoir onto the metal tripod through the butterfly connection. Adjust the metal reservoir so that it is at a comfortable breathing height for the patient. The tripod may rest on a tabletop or the floor. The angle of the reservoir should be adjusted so that the patient can breathe into it comfortably.

4. It does not matter if the reservoir points up or down, so long as the patient is comfortable. All components must be tightened into place before collecting the breath sample so that the reservoir does not move around while the patient is breathing into it.



5. The BCA will come with a single extension cord, or with an extension cord plus a power supply. If the BCA has a single extension cord...



6. ...then plug the cord into a standard electrical wall socket and the other end into the back of the BCA.



7. If the BCA has the extension cord plus a power supply box...



8. ...then plug the cord with the power supply box into the back of the BCA...



9. ...and attach the other end to the extension cord. Then plug the extension cord into a standard electrical wall socket.



10. Turn on the BCA. The power switch is on the front panel of the latest BCA model, all others have the power switch in the back.



11. Take the plastic tube provided and plug it into the front of the BCA. Push the START button.



12. If the BCA fails any part of the test, repeat the test. If it fails twice in a row the BCA needs servicing.



13.



14.



15.



16.



17. The mouthpiece fits into the filter...



18. ...as shown.



19. You will find that the smaller end of the filter fits into the reservoir.



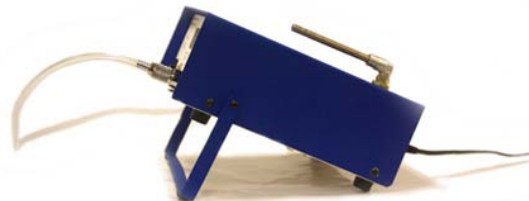
20. Insert the patient breath trap (patient sample tube) into the port on top of the reservoir. Make sure the end of the trap with engraved lines is inserted into the port. The label at the port demonstrates the trap orientation. Push the metal ring at the port back when inserting the trap into the port.

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21. There will be resistance at the "O" ring. Be sure to push the trap so that it is completely in the port. A twist of the trap will help to get the trap through the "O" ring.



22. Attach the plastic tube to the free, unetched end of the patient trap.



23. Insert the ambient air trap, or air sample tube, into the port on the BCA. Make sure the end of the trap with engraved lines faces away from the port.

24. The patient should be instructed at this point that if they feel any stress or discomfort, they are free to stop giving their sample and withdraw from the study. The patient should be made to feel relaxed and not stressed in any way.

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25. If the patient agrees to continue, they apply the nose clip to their nose at this point, and start breathing into the mouthpiece. Make sure the patient's mouth has a good seal around the mouthpiece, so that ambient air does not affect the patient's breath collection.

26. The display on the front panel should now read 'Then press the Start button.'

27. Push the START button. Display should show the following:

28. 'Continue breathing / Standby Time = 30' and counts down to zero.

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29. This is to allow time for the patient's breath to equilibrate within the reservoir, and get the patient used to breathing into the tube with a nose clip. The breath is not being collected yet, but make sure the patient maintains a tight seal around the mouthpiece.

30. Instruct the patient to breathe normally, and not to exert any force that they would not normally exert during breathing at rest. Breathing harder or faster will not aid results. Note: If anything seems to go wrong with the BCA display, pressing RESET starts the entire process again.

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31. As the patient breathes, the display will read 'Continue breathing, Collecting Time = 120' and count down to zero. The BCA is now collecting the patient's breath. Have the patient continue breathing calmly into the breath reservoir until the BCA automatically stops after two minutes. This is signaled by a BEEP from the BCA.

32. The display will read 'Patient Complete, Standby for Ambient'. The patient may now take their mouth off the mouthpiece and remove their nose clip.

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33. The BCA will automatically switch to collecting ambient air, and should read 'Collecting ambient, air Time = 120' as it counts down to zero. A BEEP indicates that the air sample is complete. Upon completion of the sample collection the display will read 'Test Successful.'

34. The traps (sample tubes) may come with brass caps or with plastic TDS3 storage containers. If you have tubes with brass caps, then take the patient sample tube and cap it at both ends with the provided Swagelok caps labeled 'B' (for 'breath'), hand tightening them to seal the tube.

35. Using a .5-inch wrench, give the caps an 1/8 or so turn just to be sure they are tight for shipping. Do not put excessive force on the caps, only just enough to seal the caps firmly. Put the sealed tubes into the provided shipping bag.

36. Take the ambient air trap and cap it at both ends with the provided Swagelok caps labeled 'A' (for 'Air') and again, be sure to secure the caps for shipping in the same way as with the patient sample trap. If you have sample traps in TDS3 plastic storage containers, then slide the traps into the plastic storage container and replace the screw caps, making sure that neither cap is at the edge of the threads on the plastic tube.

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37. The caps should be secure, but not overly tightened. The Teflon septum inside each cap will deform around the edge of the tube for a good seal. The septa should not be cut. Avoid this by tightening the caps until there is enough resistance to know that the sample traps are securely pressed into the septa. Stop tightening at that point.

38. Again, be sure to place the patient breath trap into the storage tube with B caps (B for 'breath'), and the ambient air trap into the storage tube with A caps (A for 'air'). Remember to keep your fingers off the edges of the traps.



39. Please do not attach labels onto the collection traps, since they cannot go into our thermal desorber oven that way. Attach all labels to the paperwork and inside surface of your shipping bag only.

40. Turn off the BCA. Remove the breath reservoir from its tripod and collapse the tripod for storage. Unplug the power supply.