

Blood Alcohol Analysis



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Introduction:

Blood alcohol analysis is performed using a Gas Chromatograph (GC), equipped for head space sampling. The blood samples are diluted with an internal standard and loaded into 20mL head space vials. The samples are run on the GC and quantitated using a standard curve. The results are validated using a single point injection before and after the unknown sample.

Applications:

Blood alcohol analysis is used by law enforcement to determine if a driver was unlawfully operating a vehicle. The results will be used in a court of law, therefore it is important to minimize systematic and operator errors.

Blood Alcohol Analysis Sample Preparation with the ML500 diluter:

The ML500 is used to create standards and prepare sample dilutions for Blood Alcohol Analysis. The following key features make the ML500 ideal for this application:

- A borosilicate glass and PTFE fluid path to minimize sample carryover
- Stored methods to eliminate the chance for operator error
- A logging feature in the software to record all pump operations
- Small volume accuracy to reduce wasted buffer associated with volumetric glassware

Diluter Overview:

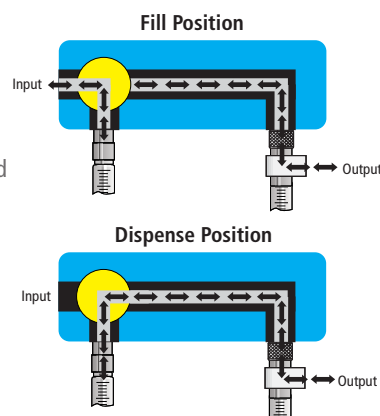
The ML500 Diluter is a semi-automated liquid handling device, ideal for repetitive and precise aspiration and dispensing over a wide range of volumes. The instrument is designed to:

- Eliminate tedious volume changes associated with traditional dispensing techniques
- Reduce user to user variation
- Increase dispense accuracy and precision
- Decrease preparation time per sample
- Record the work performed in an electronic log

General Dilution Method:

The ML500 Diluter is a dual syringe instrument with one active valve above the diluter (left) syringe. The pump is primed by filling the syringe with diluent through the input valve position and then dispensing from the output position. Once air bubbles are removed, the system is ready to prepare samples:

- Step 1: The left syringe fills with the appropriate volume of diluent.
- Step 2: The probe is positioned in the sample while the sample (right) syringe is triggered to aspirate the desired volume.
- Step 3: The probe is positioned over the head space vial and both syringes are triggered to dispense the sample followed by the diluent.
Note: The diluent washes the sample from the tubing
- Step 4: Repeat steps 1-3 for the remaining samples in the experiment.



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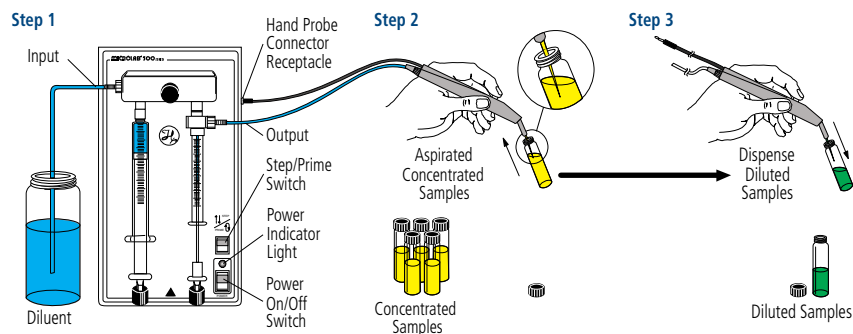


Figure 1. The figure illustrates steps 1-3 from the previous diluter overview section.

Ordering Information:

Hamilton Company offers three different ML500 series for Blood Alcohol Analysis and a variety of additional fluid handling applications.

ML500A Series (p/n ML503115) – Basic Nonprogrammable MICROLAB*. This unit ships complete with an A series controller, diluter valve, tubing, concorde style hand probe, manual, 2.5mL diluent syringe, and a 250µL sample syringe.

ML500B Series (p/n ML530115) – Programmable MICROLAB*. This unit ships complete with a B series controller, diluter valve, tubing, concorde style hand probe, manual, 2.5mL diluent syringe, and a 250µL sample syringe.

ML500C Series (p/n ML531115 or ML560115) – Computer Controlled MICROLAB*. These units ship with the ML500 control software, manual, and a communications cable. A valve and probe package (p/n DILPKG) is available separately and provides the diluter valve, tubing, and concorde style hand probe. Syringes are also sold separately**.

*To learn more about the ML500 part numbers and series above please visit:

www.hamiltoncompany.com/diluters/model-features.asp

**To view replacement parts and accessories visit:

<http://www.hamiltoncompany.com/diluters/accessories.asp>