

# **Centurion Series**

*Purge and Trap Autosamplers*



*Because you need a reliable solution*



**EST**   
*analytical*  
*Purposeful Innovation*

# Centurion Series Purge and Trap Autosamplers

## Introduction

The Centurion is designed with YOU in mind. YOU told us you need reliability, productivity and ease of use. The Centurion provides unsurpassed effectiveness by:

- Optimizing performance by eliminating all mechanical sensors that can cause lost vial, syringe or elevator errors
- Increasing productivity by eliminating the need to move water samples by sampling them in the tray dramatically reducing the number of vials to be transported to a sampling station
- Separating processing areas for water and soil samples by using two needles instead of one for decreased carryover and higher reliability
- Streamlining processes by eliminating the rotary valve for internal standard addition and replacing it with a valve that does not require samples with small particulates to flow through the valve
- Supporting the XYZ arm on both sides, instead of allowing one side to float free, creating a robust platform that is designed to give years of reliable operation

The Centurion is available in two models: water only (W) and a water/soil (WS) version. Offering 100 sample positions (90 positions for soil) in two 50-position removable trays, the Centurion platform is based on a well-proven, robust and state-of-the-art XYZ design.

## What customers are saying...

*"I love this thing!"*  
– Bench Chemist, Florida

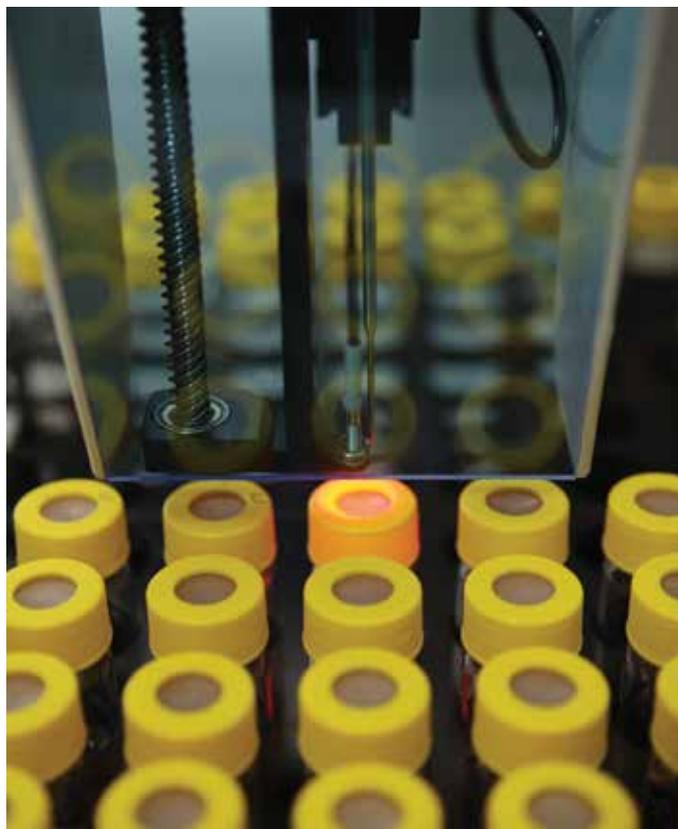
## Increase Throughput

### Water Sample Processing

Lost vial errors are eliminated when processing water samples by eliminating the need to move the vial to a processing station. The needle enters the sample and gas is pushed into the vial, forcing sample out into a fixed loop made of inert Peek™ material. Sample processing and rinses are over 3 times faster than other systems. Various sample sized loops are available, but 5ml is standard. All needles and tubing are large diameter to handle particulate laden samples easily.

Internal standard is added to the sample and the sample is then pushed over to the sparge vessel mounted on the purge and trap concentrator. Multiple samples can be extracted from a single sample vial. Sample integrity is maintained since the needle remains in the vial until sampling for both runs is complete.

After processing, the sample needle is rinsed with hot water. When the concentrator is done purging, the sample is automatically drained, and the Centurion will rinse all lines and the purging vessel with hot water. This rinse can be repeated a programmable number of times.



Fiber optic vial sensor eliminates "Lost Vial Error"

## Syringe Option

The standard Centurion comes with a fixed loop for sample processing. While this offers a very fast processing time, it does not allow the user to easily change sample volumes (1-25ml), dilute samples or dilute calibration standards automatically. With a dilution range up to 400:1, the Centurion is capable of diluting a series of 200 ppb standards to automatically generate a calibration curve ranging from 0.5-200ppb.

## Automatic, Programmable Internal Standard



The Centurion comes standard with two Internal Standard (IS) positions and a third can be added as an option. The IS valves on the Centurion utilize a new process that does not require the sample to flow through the valve to pick up standard such as old style rotary valves. Rotary valves fail due to sediment being left behind in the valve rotor, which can become scored over a period of time, causing leaks. The IS valve in the Centurion works much like an ink-jet printer where standard is injected into the sample stream. Because the system can control how many injections are performed, the user can program the amount of internal standard from 1 to 100ul in 1ul increments.

## What customers are saying...

*“For my money, EST is the best in business when looking for products and support for your volatiles instrumentation needs.”*

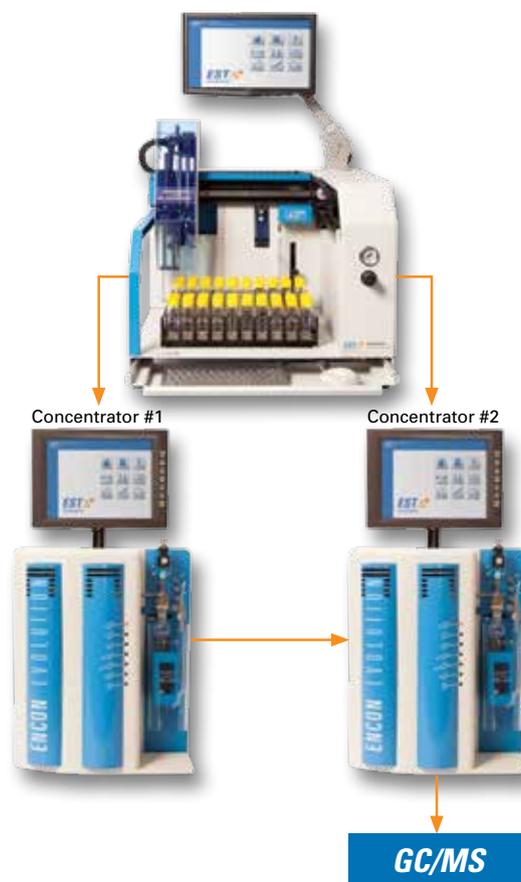
*– Lab Manager, Michigan*

## Maximize Productivity

### Dual Mode

Due to improvements in column technology, EPA Methods such as 8260 can now be performed in about 10 minutes without sacrificing chromatographic resolution. The purge and trap cycle time has become the limiting factor to sample throughput. EST Analytical is the leading innovator in supplying several high throughput VOC solutions to environmental laboratories. The key to any of EST Analytical's high throughput configurations is that NONE of the traditional parameters need to be altered from the recommended or stipulated parameters in EPA methodologies.

Only the Centurion series of autosamplers offers a built-in option which allows the autosampler to connect and control two different purge and trap concentrators. When connected to a single GC/MS, you can improve your VOC throughput up to 80 to 100 runs per day! This is equivalent to two or more conventional systems at a fraction of the cost. All sequencing is controlled by the Centurion autosampler. GC and concentrator signals are tracked to ensure nothing gets out of sequence.



## User Friendly Interface

### Centurion Software

Based upon a Windows XP™ platform, the Centurion series offers a unique interface that allows the user to easily perform diagnostics and set up sequences, as well as save and load methods. The Centurion, if placed on the company network, can be operated from any PC within the laboratory.

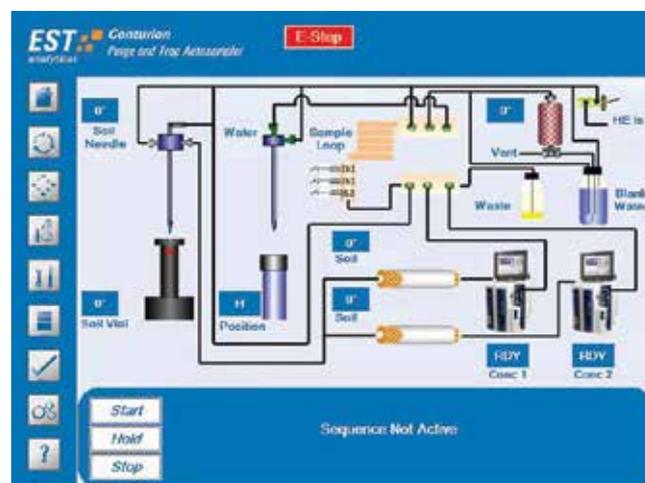
Sequences can be created with just a couple of mouse clicks. Choose how many samples you want to run, choose your method and click "Insert."



Sequence screen

While in operation, the run status screen is active. The screen will display which sequence is running, the sample number being run and the process the Centurion is currently performing. Easily seen from across the room on the 40.5 cm screen, the analyst will always know how the system is performing.

The Centurion software also incorporates a RunLog that records samples run and any errors encountered. The log can be printed or saved for later review.



Run status screen

### What customers are saying...

*"EST Analytical offers some of the best VOA equipment."*

*– Bench Chemist, Minnesota*

## Increase Efficiency

### Soil Sample Processing (WS Model)



When programmed for soil samples, the Centurion's arm will go to the sample position and look to see if a sample vial is in the tray. The Centurion uses a fiber optic sensor for this instead of a mechanical switch that can be unreliable. Once detected, the gripper will pick up the vial and move it to the heated soil station.

Water mixed with internal standard will be added to the vial. During the purge process, gas will enter the vial and travel through a heated transfer line to the purge and trap concentrator. If a stir bar has been added to the vial, the sample will be mixed during the purging process.

*The Centurion uses a separate processing station for soils than waters. Keeping these two pathways apart reduces the risk of plugging and contamination from one matrix to the other.*

Once purging is completed, the vial is placed back in its original position in the tray. Traditionally, other autosamplers backflush purge gas through the sample needle to reduce plugging and to clean the needle. To reduce carryover further, the Centurion allows some of the bake gas from the purge and trap system to flow backwards, through the transfer line and out the sampling needle, sweeping the entire sample pathway.

### What customers are saying...

***"The Centurion is extremely rugged..."***

*– Technical Director, Israel*

## Optimize Prep

### Water Prep-Mode

*(requires syringe option – patent pending)*

Many customers choose to run all samples as soil samples. This eliminates the movement of water through the system and the sparging vessel on the concentrator. Running samples this way requires the laboratory to manually prep water samples into a second VOA vial which can be a time-consuming procedure that is not EPA 5035 compliant. To accommodate customers that wish to run samples in this manner, EST Analytical has adopted a sample prep technique used on our LGX50 headspace sampler that was designed for measuring dissolved gasses/RSK in water.

To use the prep-mode, users place a full 40 ml vial of their sample in the front tray and an empty vial in the back tray. The sampler will pick up the empty vial, place it in the soil station, and move the vial up onto the needle. The vial is swept with purge gas to remove any contaminants that may be in the lab air. The needle on the sampling arm then travels to the full sample vial in the tray and pulls out the programmed volume. Internal standard is added and the sample is delivered into the empty vial that is on the soil needle and the sample is purged. By prepping the vials in this manner, the sample is never exposed to the atmosphere, maintaining sample integrity and 5035 compliance.



Samples run in the soil position can be heated and stirred while being purged

# Centurion Series Purge and Trap Autosamplers

## Specifications

### General

- Rugged X-Y-Z platform
- Windows XPe™ operating system
- Runs blanks from its own blank/wash water reservoir
- All sample pathways are chemically inert, manufactured from Peek™, Stainless Steel, or Teflon
- Separate needles for the soil and water modes minimize carryover between the two matrices
- Built in Minimizer Valve decreases carryover on soil samples by diverting some of the bake flow from the concentrator through the entire soil pathway of the Centurion
- Priority Sample feature allows the current analysis to be interrupted for RUSH samples
- Installation to any manufacturers' purge and trap concentrator
- Hot water rinse utilizes a cartridge heater to heat rinse water to 90°C prior to flushing sample pathways and the purge vessel

### Tray Capacity

- 100 40ml vial sample positions located in two 50-position trays (100 positions for water samples, 90 positions for soil)

### Sample Volume

- 5, 10, 15, 20, 25ml sample loop, 5 to 25ml volume syringe – Syringe Optional (1ml increments for syringe)
- Dilution capability (syringe option required) up to 400:1

### Standard Injection System

- Two programmable (third as an option) internal standard positions

### Precision

- < 3% RSD measured by GC/FID for Fluorobenzene and Bromofluorobenzene (n=7)

## Indoor Use

### Altitude

- Up to 2000 m

### Temperatures

- Operating: 15°C to 35°C
- Storage: 5°C to 85°C

### Relative Humidity

- 10 to 90%

### Line Voltage

- 115/230Vac (±10%)
- 50/60 Hz
- 920 watts

### Weight

- 80 lbs (36.5 kg)

### Size

- 24.5"W (62.2cm) x 27"D (68.6cm) x 25"H (63.5cm)

### Gas Supply

- Helium or Nitrogen 60-80 psi (414-552kPa)  
99.999% GC/MS grade purity

### Options

- Tray Cooling (external recirculation bath required)
- Syringe Option – allows sample volume programmability 1-25ml and dilution up to 400:1
- Optional dual concentrator mode for water samples
- Third programmable internal standard position



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