



Agilent 7693A Series Automatic Liquid Sampler

# INJECT NEW PERFORMANCE INTO YOUR GAS CHROMATOGRAPHY

The Measure of Confidence



**Agilent Technologies**

## AGILENT 7693A SERIES AUTOMATIC LIQUID SAMPLER

### A powerful combination of productivity and flexibility

Autosampler problems lead to data imprecision and inaccuracy. Autosamplers can waste time due to re-analysis when there is enough sample or re-extraction and re-analysis. The results can be at the mercy of the autosampler. Agilent eliminates these autosampler problems using knowledge gained from over 40 years of GC leadership and building from there.

**Agilent's 7693A Automatic Liquid Sampler (ALS)** is a complete redesign of our 7683B ALS, the long-time industry leader. The system takes advantage of today's latest technology to deliver even greater reliability, performance, and flexibility.



Whether you have hundreds of samples to analyze, or just a few, the 7693A system gives you sample handling and injection capabilities that are best in class.

## Enhanced performance and productivity

From small-volume injection, to large-volume injection, to multi-layer sampling, the 7693A system can help you process samples more quickly – and get better data, too.

Agilent's dual simultaneous injection feature saves time by doubling your sample throughput. And our fast-injection technology minimizes needle discrimination and sample degradation. It also ensures the best possible peak shape, while maximizing the accuracy of your results.

## Unmatched flexibility

No built-in autosampler can match the flexibility you get with the 7693A ALS. The system's modular design works seamlessly with Agilent gas chromatographs, including the 6890A GC\* through 7890B GC. The 7693A injection tower is also compatible with Agilent 7820A\* and 6850 GC systems.

What's more, the 7693A system adapts easily to your lab's changing needs. For example, you could start with a basic injector equipped with a 16-sample turret; later, you could add a second injector, a 150-sample tray, and a vial Heater/Mixer/Bar Code Reader.

## Maximum uptime

The self-aligning "plug and play" injector mounts in seconds without tools, and can easily be moved from one inlet to another – or transferred between GCs when workloads change. Its lightweight, removable design also permits easy inlet maintenance.

In addition, greater solvent capacity (>20 mL), plus the ability to load up to 150 samples, means longer unattended operation. Solvent-saver mode will increase your capacity even more. And built-in Agilent reliability gives you the confidence to run the system day and night with minimal operator attention – and without the need for calibration or adjustment.

\* 6890A/7820A requires optional controller.



### Sample capacity to meet any requirement

With its expanded 16-vial turret, the 7693A's standard configuration provides up to 8 hours of analysis. Need more capacity? The 150-vial tray is up to the task.



### Active gripper

Active fingers hold each vial by its sides for greater flexibility in handling a wider range of vials and caps. Sensors also detect whether or not a vial has been grasped.

### A choice of injection modes

Agilent's fast injection enhances chromatographic results by ensuring minimal needle discrimination and sample decomposition. Plunger speed can be precisely regulated, enabling true optimization for large volume injections or challenging applications.

### Heater/Mixer/Bar Code Reader

An optional Heater/Mixer/Bar Code Reader and second injector can be used to prepare highly viscous or slightly soluble samples, as well as for dilution, mixing, derivatization and bar-coded sample tracking. All functions are controlled via easy-to-use software.

### Next sample overlap support

Decrease your analysis time and increase throughput by performing pre-run rinses and picking up the next sample before the current run is complete.

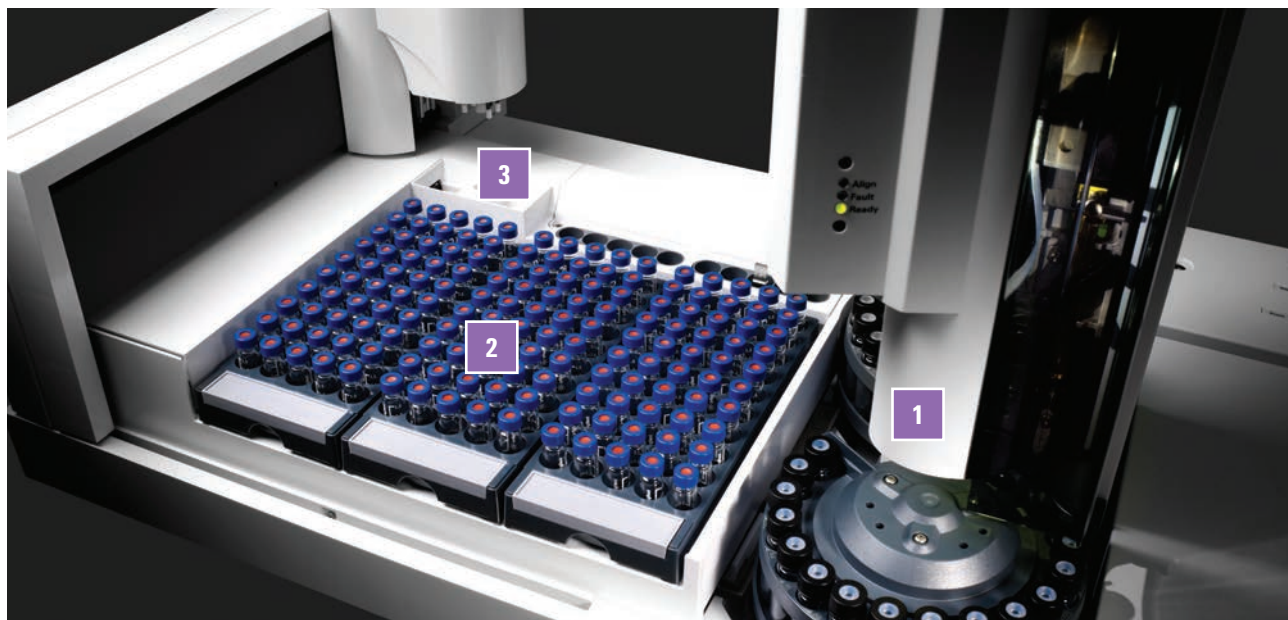
### Modular design for easy service and support

Should service be required, repair options include returning the system to Agilent for quick exchange or repair. Onsite repair is also available, depending on your lab's needs.



# THE BETTER THE INJECTION, THE BETTER THE CHROMATOGRAPHY

Like its predecessor, the Agilent 7693A has been engineered for maximum performance and reliability while providing added flexibility to meet your lab's changing requirements.



Three modular sections suit your current – and evolving – needs

## 1 Injection Tower

Automates the analyses of up to sixteen samples with a capacity for two solvent bottles and one waste bottle. When combined with the vial tray, the injection tower can hold ten solvent vials and five waste vials, as well as three sample vial transfer positions – giving the system unprecedented sample handling flexibility.

## 2 Sample Tray

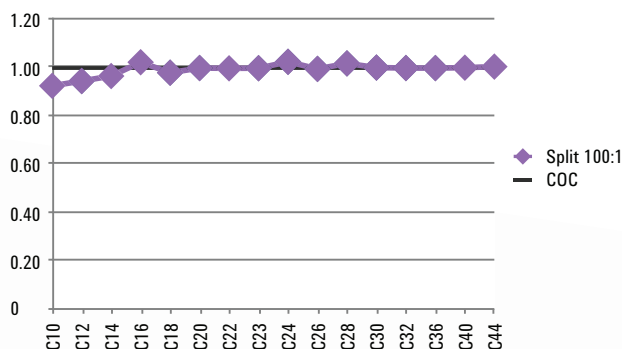
This unique vial handling system uses three separate 50-vial racks for a total capacity of 150 samples. A full tray heater/cooler is also available, along with a separately supplied recirculating temperature bath.

## 3 Heater/Mixer/ Bar Code Reader

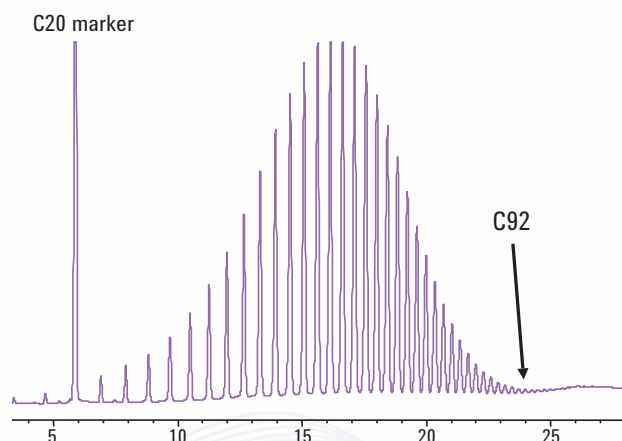
To give you even more sample handling capabilities, an optional module allows heating, mixing and bar code reading of samples immediately prior to injection.

In addition, our new **Bar Code Label Printing Bundle** lets you print easy-to-read bar code labels right from a spreadsheet or database – minimizing typos and ensuring accurate Sample ID and tracking. The bundle comes complete with printer, software, templates, and labels.

## Agilent exclusive fast injection – under 100 milliseconds!



**Agilent's 100-millisecond injection** eliminates a major source of sample discrimination and ensures that your injections are as representative of the sample as possible. Fast injection also simplifies quantitation by enabling the use of external standards.



**Preparation and run of high temperature SIMDIS calibration standard Polywax 655.** The optional single-vial Heater/Mixer/Bar Code Reader lets you automatically heat samples up to 80°C and mix them prior to injection, significantly improving high molecular weight performance and chromatographic results.

## Best-in-class precision

Carbon #	Split Area % RSD	Splitless Area % RSD	On Column Area % RSD
10	0.20	0.26	0.33
12	0.20	0.27	0.36
14	0.20	0.27	0.40
16	0.21	0.30	0.41
18	0.23	0.28	0.27
20	0.25	0.28	0.41
22	0.28	0.28	0.41
24	0.30	0.28	0.42
32	0.39	0.30	0.41
36	0.29	0.35	0.41
40	0.34	0.27	0.42
44	0.27	0.33	0.42

Table refers to results of ten 1 µL injections.

Whether you're detecting emerging contaminants in drinking water or testing drugs for purity, your results have to be correct, precise, and irrefutable. And the 7693A helps to ensure your best chromatography with advanced injection features.

- Multiple wash solvent capability for pre- and post-injection needle rinsing reduces sample carryover
- Pre-injection sample pumps and pre-injection washes further reduce the possibility of carryover.
- Sample trays are mounted away from GC oven to prevent exposure to high temperatures that could cause degradation or condensation in the sample vial.
- Single stroke injection volume as small as 0.01 µL and as large as 250 µL let you precisely match injections to the exact needs of your analyses.
- Agilent syringes, engineered for longer plunger lifetime, reduce carryover and increase accuracy over a wider range of injection volumes.
- Advanced automation capabilities eliminate sources of GC operator variability and human error to minimize rework.

To learn more about Agilent 7693A Series Automatic Liquid Samplers, visit [agilent.com/chem/7693A](http://agilent.com/chem/7693A)

# PRE-INJECTION SAMPLE HANDLING SAVES STEPS, BOOSTS PRODUCTIVITY



In addition to conventional and fast injection modes, the 7693A system offers pre-injection sample handling capabilities that can further enhance your lab's flexibility, productivity, and performance. Ideal for routine sample handling in a wide range of industries and applications – including forensics, food and environmental analysis –

this can eliminate or minimize separate sample prep work, saving both time and resources.

The addition of a second injection tower, optional Heater/Mixer/Bar Code Reader and easy-to-use Agilent software gives you the flexibility to optimize for performance, cost-efficiency, or unique analytical requirements. For example, you can add a derivatization agent – or heat the sample vial, add a second solvent, mix it and inject into the system – all automatically!

**Case Study:** How advanced automation capabilities minimized analyst-to-analyst variability, accelerated sample prep, and reduced rework

## The problem

Analyzing free and total glycerin in biodiesel<sup>1</sup> involves complicated, time-consuming sample preparation – plus five multi-component calibration solutions, two internal standards, and a derivatization step. Person-to-person variability is also a concern, because several bench chemists must run this analysis.

## One lab's solution

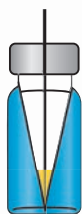
The lab team used the built-in capabilities of Agilent's 7693A ALS system to automate the preparation of calibration standards, standards addition, derivatization, and sample injection.

The benefits were immediate and dramatic: No more analyst-to-analyst variability, shorter analysis times, and a 90% reduction in solvent and waste costs. Operator exposure to harmful reagents was also minimized, and rework became a thing of the past.

<sup>1</sup> 5990-3781EN: Automated Standard and Sample Preparation for Multiple Gas Chromatographic Analyses of Biodiesel



**Liquid/liquid extraction**



**Small-volume sampling**



**Reagent and standard addition**



**Dilution/aliquoting/reconstitution**



**Heating/mixing**



**Bar code reading**

**Extended sampling flexibility and automation options.** Variable needle depths allow you to sample anywhere within the vial, while optional sample handling capabilities further enhance your productivity.

Agilent gives you **two** software options that allow you to quickly create powerful, custom sample handling routines for virtually any application.

## Menu-driven Sample Prep

Commands

Initialize tower  
Dispense  
**Heat**  
Load  
Mix sample  
Move vial  
Pumps  
Return All  
Wait  
Washes

Program step setpoints

Temperature

☐ Do not change temp  
☐ Off  
☒ Use specified temperature

60 °C

Time

☐ No wait  
☒ Use specified time

300 sec

Comment:

Append

Insert

Replace

Command help

Sampler program steps

Move vial from front sample vial to back turret position #1  
Move vial from tray vial #4 to back turret position #3  
Move vial from tray vial #2 to back turret position #2  
Dispense 400% from vial Sample 3 to vial Sample 1 on the Back tower  
Dispense 5% from vial Sample 2 to vial Sample 1 on the Back tower  
Move vial from back turret position #1 to mixer  
Move vial from back turret position #3 to tray vial #4  
Move vial from back turret position #2 to tray vial #2  
Mix at 2000 rpm 5 times for 20 seconds  
Move vial from mixer to heater  
Heat vial at 60 degrees C for 300 seconds  
Move vial from heater to tray vial #1

Cut

Copy

Paste

Move Up

Move Down

**Menu-driven Sample Prep software.**

Agilent's standard software utility allows you to take full advantage of the advanced injection and sample handling capabilities of the 7693A autosampler system. Intuitive drop-down menus and online help guide you through the process from start to finish.

This standard interface can be used with GC ChemStation and EZChrom, as well as MSD ChemStation and MassHunter platforms.

## Easy SamplePrep – drag-and-drop simplicity

Easy Sample Prep Resource Editor Version 2.1.30.0

Syringe Parameters

Syringe Size (µL): 500

Number of Washes: 1

Number of Purge: 1

Wash Volume (µL): 50

Draw Speed (µL/min): 1250

Dispense Speed (µL/min): 2500

Needs Depth Offset (0.1 mm steps): 1

Viscosity Delay (s): 1

Air Gap (ft. Syt. Vol): 0

Resource Name: H2O

Resource Type: Chemical/Resource

Use Type: ☒ By Volume ☐ By Use

Usable Volume per Vial (µL): 1500

Uses per Vial: 1

Display Color: Red

<< Resource Syringe Parameters

Val Range: 131-150

Resources Tracked by Use

Resources Tracked by Volume

Help Save Layout Print Layout Close

Agilent 7000A - Agilent 7000A Sample Prep Program

Use Sample Prep Program

Run for Unknown Samples only

Input Export

Steps

1. Add 250 µL of Sample (For) to Sample Prep
2. Add 50 µL of H2O to Sample Prep
3. Add 500 µL of H2O to Sample Prep
4. Add 15 µL of MeOH to Sample Prep
5. Mix Sample Prep at 1000 RPM for 5 min
6. Heat Sample Prep at 20 °C for 1 min

Resources Tracked by Use

Resource Name	Resource Type	Usable/Vial	Vial Range
H2O	Chemical/Resource	4	101-110,116-120
Vial	Empty Container	1	91-100

Resources Tracked by Volume

Resource Name	Resource Type	Usable Volume/µL	Vial Range
H2O	Chemical/Resource	1500	131-150
MeOH	Chemical/Resource	1500	111-115,121-130

OK Apply Upload from Instrument Cancel Help

Drag-and-drop simplicity: Easy SamplePrep makes it easy to

**Drag-and-drop simplicity:** Easy SamplePrep makes it easy to create custom sample prep programs with basic steps such as "Add, Mix, Heat, and Wait."

**Easy SamplePrep software**, available with OpenLAB CDS, allows color-coded resource identification and tracking. Easy SamplePrep software may be included in your hardware purchase. Please check with your Agilent Representative.

To learn more about Agilent 7693A Series Automatic Liquid Samplers, visit [agilent.com/chem/7693A](http://agilent.com/chem/7693A)



## Our catalog of new applications is ever growing.

To learn more about the Agilent 7693A Series Automatic Liquid Sampler visit us online at [agilent.com/chem/7693A](http://agilent.com/chem/7693A)

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## Agilent vials, caps, and syringes ensure maximum uptime and peak performance

Designed to complement your Agilent 7693A system, our certified vials, caps, syringes, and other ALS supplies are engineered to give you the consistent results you expect from Agilent instruments.

Through our opto-electronic screening system, every single vial and cap is checked and those that are not within specs are rejected.

Our Certified vials and caps are *guaranteed* to work on Agilent autosamplers: saving you the expense of replacing broken or misaligned vials that often result when using competitor's vials.

Choose from a broad selection of premium, high-purity septa screw cap vials, trays, labels, cold/hot trays, large-volume injection carriages, and electronic crimpers. We also offer premium syringes – available in a wide range of sizes, including 500 µL – that increase service life, reduce carryover, and improve accuracy.

Learn more about Agilent certified vials: [agilent.com/chem/certifiedvials](http://agilent.com/chem/certifiedvials)

## Agilent GC supplies help keep routine maintenance routine

Our capillary column ferrules, O-rings and septa are packaged to remain clean and ready to use. An exclusive non-stick plasma coating on our premium inlet septa and pre-cleaned O-rings simplifies maintenance and eliminates downtime caused by inlet surface residue. The coating also shortens bakeout times after preventive maintenance, so you can start running samples sooner.

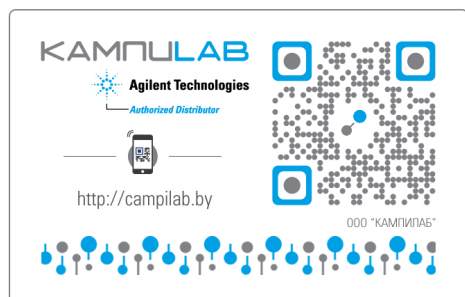
## The Agilent 10-Year Value Promise

In addition to continually evolving products, the Agilent Value Promise guarantees you at least 10 years of instrument use from your date of purchase, or we will credit you with the residual value of that system toward an upgraded model. Only Agilent ensures you a safe purchase now and protects the value of your investment in the long run.



## The Agilent Service Guarantee

Should your Agilent instrument require service while covered by an Agilent service agreement, we guarantee repair or we will replace your instrument for free. No other manufacturer or service provider offers this level of commitment to keeping your laboratory running at maximum productivity.



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