

Agilent 7693A Automated Liquid Sampler

Overview

The Agilent 7693A is a state-of-the-art sample handling and injection system that provides the highest levels of precision and reliability for gas chromatographic sampling. The 7693A is a complete redesign of the most popular gas chromatographic sample introduction system in history. It takes advantage of the latest technology to offer greater reliability and performance.

The 7693A system consists of:

- Injection tower
- Sample tray
- Heater/mixer/bar code reader
- Enhanced Sample Handling Syringe Carriage
- Heater/chiller module
- Controller board for use with the Agilent 6890 Plus
- Controller for use with 6890A

Compatibility

Agilent 8890 and 8860 GC systems, Agilent Intuvo 9000 GC system, Agilent 7890A and 7890B GC systems, Agilent 6890N, 6890 Plus, and 6890A GCs, Agilent 6850N and 6850A GCs (injector only), Agilent 7820 GC (injector only), and Agilent 5975T GC/MSD

Chromatographic performance

- Sample discrimination $\leq 10\%$ ¹
- Better than 0.3% RSD area reproducibility²
- Less than 5% RSD in response factor variation³
- Less than 1 part in 100,000 carryover⁴

¹ From cool on-column analysis of C₁₀-C₄₂; Meets or exceeds ASTM 2887

² Chromatographic conditions for C₁₀-C₁₆:

1 μ L injection (5 μ L syringe)

10 injections

One sample wash; six sample pumps

Inlet Split 100:1 (He); 250 °C;

3 mL/min (constant flow)

Column HP-5MS, 30 m \times 320 μ m, 0.250 μ m df

Oven 180 °C isothermal

Detector FID

³ Chromatographic conditions for C₁₄-C₁₆

10 μ L syringe

10 injections for each volume; injection volumes from 10 to 50%

Two sample washes; six sample pumps

Three solvent A and B washes postinjection

Inlet Split 25:1 (He); 250 °C;

3.2 mL/min (constant flow)

Column HP-5MS, 30 m \times 320 μ m, 0.500 μ m df

Oven 100 °C (1 minute); 30 °C/min to 250 °C

Detector FID

⁴ Determined by residual analyte area measured in subsequent solvent blank (four solvent A and four solvent B postwashes)

Injection features

- Fast and on-column default injection types
- Fully programmable dispense rate, draw rate, and injection rate
- Fast injections are performed in less than 100 ms
- Support of 250 and 500 μ L syringes with optional Enhanced Sample Handling Syringe Carriage
- User-definable sandwich injection mode

- Transfer turret can hold up to three 2 mL vials at once for use with advanced sampler capabilities
- Active vial-gripping mechanism
- Sensors in the vial-gripper mechanism to detect that a sample vial has been grasped
- Sensors in the injector turret to detect that the sample vial has been transferred to the injector
- Sensors to detect the presence of Enhanced Sample Handling Syringe Carriage
- Sensors to detect the injection port location for easy movement between front and rear inlet ports
- Illuminated syringe for easy viewing
- User-changeable syringe carriage
- Self-aligning injector and tray
- Available solvent-saving mode extends solvent capacity by up to eightfold

Sample injection

The 7693A injector provides a wide range of injection capabilities to provide maximum flexibility. see Table 1.

Sample management

Vial handling

- System supports neckless (shell) vials, standard 2 mL vials, and micro vial inserts
- 16 samples with injection tower and standalone turret
- 150 samples with injection tower and tray
- Sampler tray positioned away from GC to minimize exposure to heat
- Tray samples stored in three removable 5 \times 10 racks
- Racks are compatible with multitype pipettes

Table 1. Sample injection parameters.

Parameter	Value
Injection Parameter Control	Parameter range
Variable Sampling Depth	-2 to +30 mm above default
Pre- and Postinjection Syringe	0 to 15 rinses for each of solvent A and B rinsing
Sample Prewashes	0 to 15 prewashes
Viscosity Delay	0 to 7 seconds
Pre-injection Sample Pumps	0 to 15 pumps
Minimum Sample Injection	10 nL (with 0.5 μ L or 1 μ L syringe)
Maximum Sample Injection	50 μ L (with 100 μ L syringe in standard tower) 250 μ L (with 500 μ L syringe and Enhanced Sample Handling Syringe Carriage)
Injection Plunger Speed	Fast/slow/variable
On-Column Injection Mode	Automatic
Multiple Injection Mode	1 to 99 injections of specified volume
Injection Delay Time	0 to 1 minute (within multiple injection mode)
Pre-injection Dwell Time	0 to 1 minute
Postinjection Dwell Time	0 to 1 minute
Solvent Saver	Set at 10, 20, 30, 40, and 80% of syringe volume
Injection Range	1 to 50% of syringe volume in increments of 1%
Syringe Size	1, 2, 5, 10, 25, 50, and 100 μ L maximum volume with standard syringe carriage 250 and 500 μ L maximum volume with optional Enhanced Sample Handling Syringe Carriage

Solvent

- 4 mL solvent vials
- 2 × 4 mL for injector tower with standalone turret (usable solvent capacity of 4 mL)
- 10 × 4 mL for injector tower with transfer turret (usable solvent capacity of 20 mL)

Syringe support

- Up to 100 µL with standard syringe carriage
- 250/500 µL with optional Enhanced Sample Handling Syringe Carriage
- Supports compatible liquid and gastight syringes

Sample sequencing

- Advanced sequencing with random access using Agilent software
- Simple sequencing using the 7890/6890 Series GC keyboard
- Next sample overlap (Not available on 6850)
- Capability to run priority samples

Heater/chiller module

- User installable
- Heats or cools all 150 vials in the tray (temperature range 5 to 60 °C).
- Built-in sensor monitors average coolant temperature in plate.
- Uses aluminum vial racks to hold samples.
- Requires customer-supplied thermal bath recirculator.

Heater/mixer/bar code reader

- Single vial heating prior to injection (temperature range 35 to 80 °C)
- Single vial mixing prior to injection
- Heating time and mixing time are fully programmable
- Bidirectional mixing up to 4,000 rpm
- Entire module is integrated into a 150-position sample tray

Physical specifications

Nominal weights and dimensions

Weight	
7693A injector	3.9 kg
7693A tray without options or accessories	6.8 kg
7693A tray with heater/mixer/bar code reader	7.1 kg
7693A tray with heater/chiller	9.0 kg
7693A tray with heater/mixer/bar code reader and heater/chiller	9.3 kg
Controller box for 6890A	5 kg
Height	
Above bench surface of top of 7693A injector as mounted on 8890/8860	95 cm
Above bench surface of bottom of 7693A tray as mounted on 8890/8860	43 cm
Above bench surface of top of 7693A tray as mounted on 8890/8860	73 cm
Above bench surface of top of 7693A injector as mounted on Intuvo	100 cm
Above bench surface of bottom of 7693A tray as mounted on Intuvo	49 cm
Above bench surface of top of 7693A tray as mounted on Intuvo	79 cm
Controller box for 6890A	11 cm
Width	
Extension of 7693A tray past left side of 8890/8860/Intuvo	43 cm
Controller box for 6890A	25 cm
Depth	
7693A tray with/without options, front to back	42 cm
Extension of 7693A tray past front of 8890/8860/Intuvo	4.2 cm
6890A controller	31 cm

Technical and environmental

- Indoor use only in ordinary atmospheres
- Altitude up to 4,300 m
- Ambient operating temperature 15 to 35 °C
- Ambient operating humidity 5 to 95%
- Mains supply voltage fluctuations up to ±10% of the nominal voltage
- Pollution degree 2, Installation Cat II
- 7693A, ALS Controller, is rated for mains connection to 100 to 120 VAC or 220 to 240 VAC, 50/60 Hz, 180 VA

Safety and support

- Injector will not operate if not mounted on GC.
- Error indicators show the source operating failure.
- Flash memory allows product firmware enhancements to be uploaded through a PC.
- Onsite repair is available for the 7693A injector and tray system.
- In the event of any instrument failures, Agilent's industry-leading Express Exchange* service can minimize downtime by shipping replacement sampler modules within hours.
- Contact sales representative to verify compatibility with software.

* Not available in all countries.

www.agilent.com/chem

For Research Use Only. Not for use in diagnostic procedures.

DE.5300462963

This information is subject to change without notice.

© Agilent Technologies, Inc. 2013, 2020, 2021
Printed in the USA, December 6, 2021
5990-3526EN

