Agilent 6850
Automatic Liquid Sampler

Part number G2880-90307
First Edition, JUL 2000

Printed in USA

Safety Information

The 6850 Automatic Liquid Sampler meets the following IEC (International Electrotechnical Commission) classifications: Safety Class 1, Transient Overvoltage Category II, and Pollution Degree 2. This unit has been designed and tested in accordance with recognized safety standards and designed for use indoors. Whenever the safety protection of the 6850 Automatic Liquid Sampler has been compromised, disconnect the unit from all power sources and secure the unit against unintended operation.

The recyclable carbon monoflouride lithium battery is BR-2/3 A 1,200 mAh. Fuses F001 and F002 are 3 A, 250 Vac, IEC 127 Type T. Fuses F201 and F202 are 10 A, 250 Vac, IEC 127 Type T. Fuse F101 is a 0.5 A, 250 Vac.

Warnings in this manual or on the instrument must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions violates safety standards of design and the intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

Refer servicing to qualified service personnel. Substituting parts or performing any unauthorized modification to the instrument may result in a safety hazard. Disconnect the AC power cord before removing covers. The customer should not attempt to replace the battery or fuses in this instrument.

Safety Symbols

This manual contains safety information that should be followed by the user to ensure safe operation.

WARNING
A warning calls attention to a condition or possible situation that could cause injury to the user.

CAUTION
A caution calls attention to a condition or possible situation that could damage or destroy the product or the user's work.


Indicates a hot surface


Indicates earth (ground) terminal

Electromagnetic Compatibility

This device complies with the requirements of CISPR 11. Operation is subject to the following two conditions:

1 This device may not cause harmful interference.
2 This device must accept any interference received, including interference that may cause undesired operation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

1 Relocate the radio or antenna.
2 Move the device away from the radio or television.
3 Plug the device into a different electrical outlet, so that the device and the radio or television are on separate electrical circuits.
4 Make sure that all peripheral devices are also certified.
5 Make sure that appropriate cables are used to connect the device to peripheral equipment.
6 Consult your equipment dealer, Agilent Technologies, or an experienced technician for assistance.
7 Changes or modifications not expressly approved by Agilent Technologies could void the user's authority to operate the equipment.

Sound Emission Certification for Federal Republic of Germany

The following information is provided to comply with the requirements of the German Sound Emission Directive dated January 18, 1991.
Sound pressure Lp
< 57 dB(A)
during normal operation
at the operator position
according to ISO 7779 (Type Test).

When operating the Automatic Liquid Sampler, the sound pressure ≈68 dB(A) during short burst injection pulses.

Schallemission

Diese Information steht im Zusammenhang mit den Anforderungen der Maschinenlärminformationsv erordnung vom 18 Januar 1991.

Schalldruckpegel LP < 57 dB(A)
Am Arbeitsplatz
Normaler Betrieb
Nach DIN 45635 T. 19 (Typprüfung)

Bei Betrieb des
Agilent Automatischer
Slüssigkeitsprobengeber treten beim
Oeffnen des Ventils impulsfoermig
Schalldrucke Lp bis ca. 68 dB(A) auf.

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Getting Started with your 6850 Automatic Liquid Sampler

The Agilent Technologies 6850 Automatic Liquid Sampler (ALS) is specifically designed for use with your 6850 Gas Chromatograph (GC). The sampler consists of an injector module with a high sample vial capacity turret. It mounts directly onto your 6850 GC and is controlled by your Agilent G2629A Control Module, Agilent Cerity NDS system, or Agilent ChemStation.

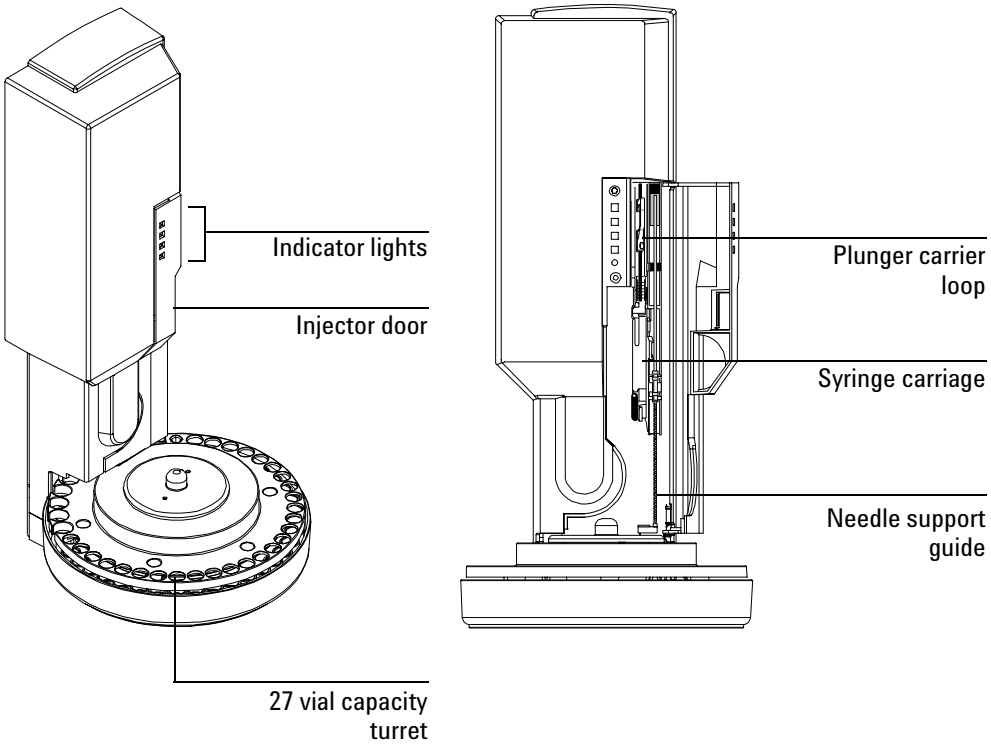


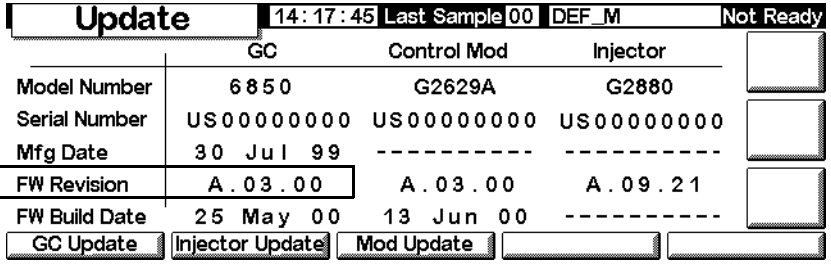
Figure 1. The 6850 Automatic Liquid Sampler

Installation

Requirements

The 6850 ALS requires a 6850 GC with firmware revision A.03.xx or higher. Check the GC serial number next to the on/off switch. If your GC serial number is ≥ US00001500, you have the correct firmware installed. If you are unsure what your GC's firmware revision is, you can check it using a G2629A Control Module.

To check your firmware revision using a Control Module, go to the Status/ Service/Update screen:

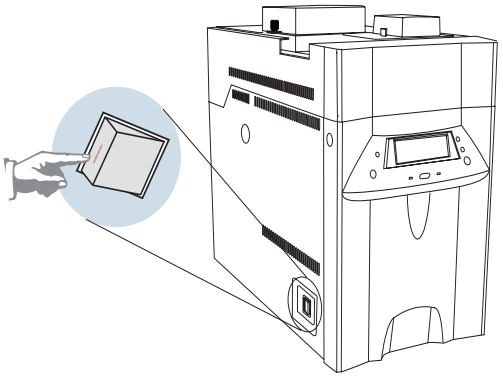


GC firmware revision

To update the GC firmware, you need a Control Module and a PC memory card containing the correct firmware version. If you require a firmware update, contact Agilent.

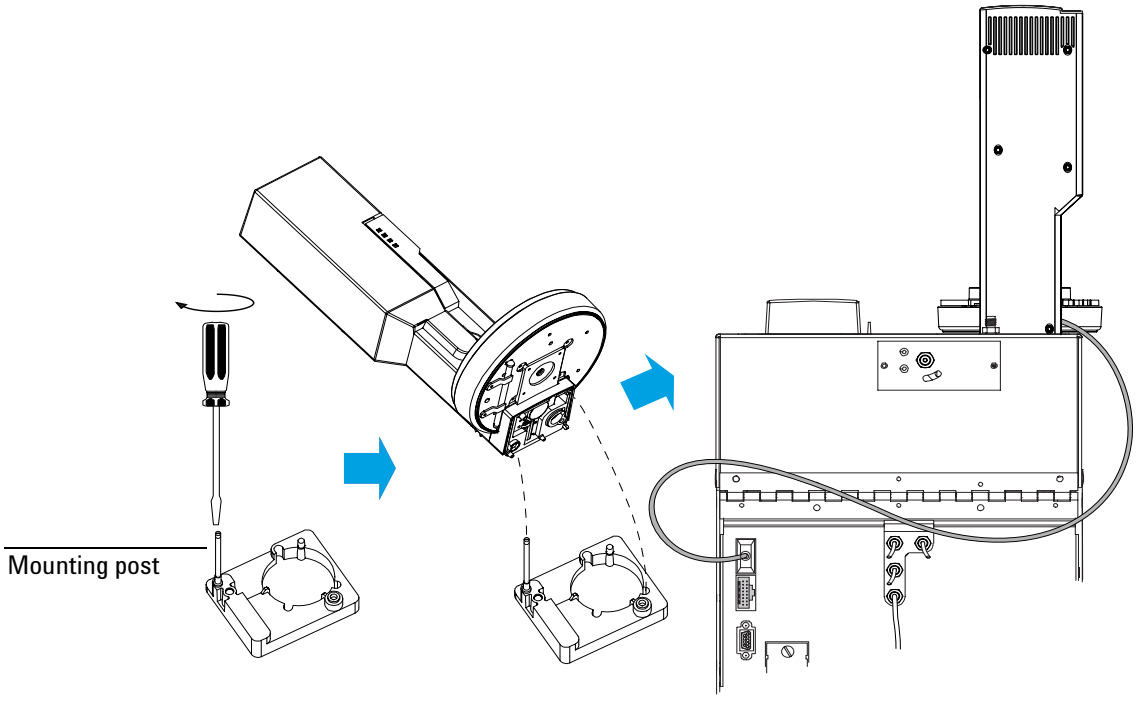
Prepare for installation

1. Remove the packing material from the injector.
2. Turn the inlet, oven, and detector off and let them cool down to room temperature. Then turn off the GC.

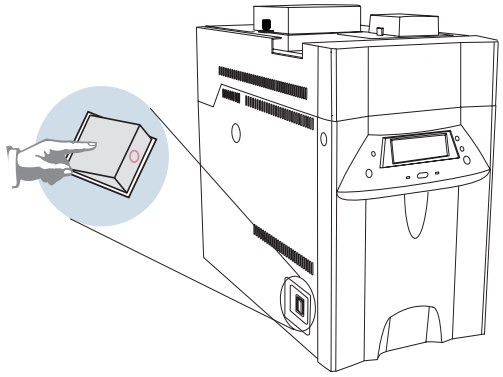


Mount the injector

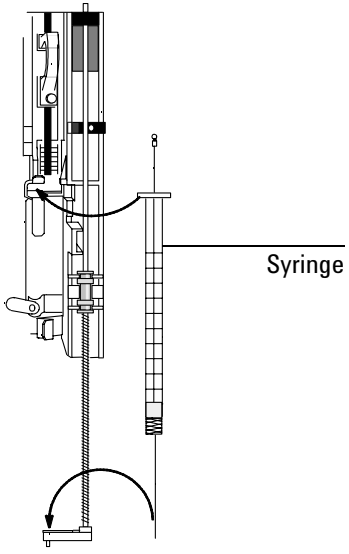
1. Install the mounting post, sampler and cable.



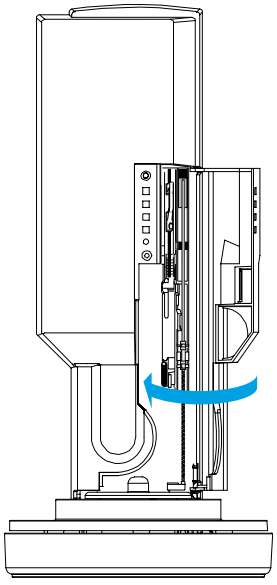
2. Turn on the GC.



3. Install your syringe.



4. Close the injector door. The Ready indicator light (green) should now be lit, indicating that your 6850 ALS is ready for use.



Using your 6850 ALS

6850 ALS Capabilities

Your 6850 ALS comes with a turret that holds up to 27 2-mL sample vials. Also available is an optional turret holding up to 22 4-mL sample vials. With either turret, the 6850 ALS can use up to two bottles each of two solvent types, and uses three bottles for waste collection.

The features and general capabilities of your 6850 ALS are listed in Table 1, along with an explanation of the benefits of each.

Table 1. 6850 Automatic Liquid Sampler Capabilities

General Options	
Syringe size	5, 10, 25, 50, and 100 µL
Injection volumes	2%, 10%, 20%, 30%, 40%, or 50% of syringe volume
Syringe rinse solvents	Solvent A: two 4 mL bottles
	Solvent B: two 4 mL bottles

Injection Parameter Control		
Parameter	**Range**	**Benefits**
Variable sampling depth	–2 to +30 mm above default position	Accesses very small sample volumes Accesses a specific layer in a two-phase sample Avoids aspirating sample particulates
Pre-injection syringe rinsing and post-injection syringe rinsing	0–15 rinses using solvent A and/or solvent B	Minimizes sample carryover A pre-injection rinse wets the syringe without consuming sample
Sample prewashes	0–15 prewashes	An additional way to minimize sample carryover

Injection Parameter Control

Parameter	Range	Benefits
Viscosity delay, top of plunger stroke	0–7 seconds	Improves sampling accuracy of viscous samples
Pre-injection sample pumps	0–15 pumps	Ensures accurate and reproducible sample volume Removes bubbles
Minimum sample injection volume (single injection)	0.1 µL (5-µL syringe)	Prevents overloading the column when using concentrated samples, on-column injections, or small-diameter columns
Maximum sample injection volume	50 µL (100-µL syringe)	Supports ambient headspace analysis using gas-tight syringe
Injection plunger speed	Fast/Slow	Fast plunger minimizes needle discrimination (see injection flow in vaporizing inlets rate table) Slow plunger mimics manual techniques
Pre-injection dwell time	0–1 minute	Automatically fills needle with 1 µL of air after sampling Automates “hot needle” injection technique
Post-injection dwell time	0–1 minute	Mimics manual injection
Injections per vial	1–99 injections	For replicating sample analysis

Injection Flow Rates

Syringe Size	Plunger Parameter (µL/min)	
(µL)	Fast	Slow
5	3,000	150
10	6,000	300
25	15,000	750
50	30,000	1,500
100	60,000	3,000

The sample turret

Sample vials

The sample turret contains positions for 27 2-mL vials. The optional 4-mL sample vial turret has a capacity of 22 vials. See Figure 2. When used with Agilent Cerity NDS or ChemStation control software, the sample vials can be analyzed in random order. If controlled using a G2629A Control Module, you must load your sample vials in the order you want them run.

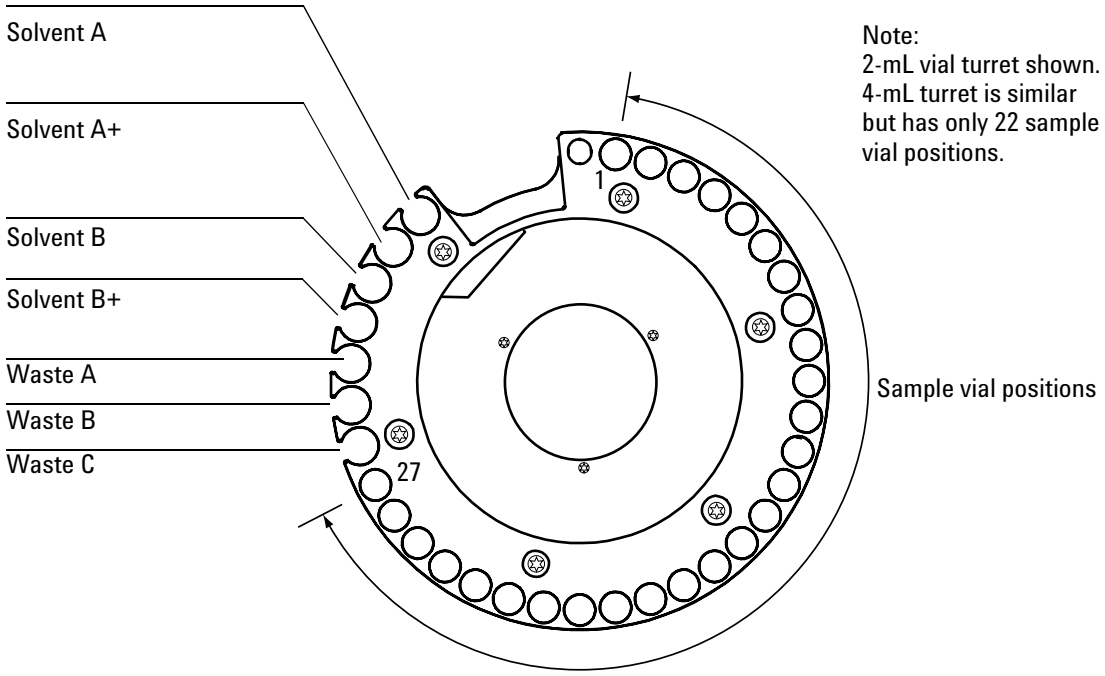


Figure 2. The 6850 ALS turret (2-mL version shown)

Solvent and waste bottle usage

When a syringe is washed (both pre- and post-injection washes), it is filled to 80% of its full volume and then emptied into a waste bottle. Sufficient

solvent must be available for the washes, and waste bottles must be present to receive the used solvent.

With either turret type, you can use one, two or four solvent bottles for pre- and post-injection rinses. The choice depends on whether you want to use different solvents for the two kinds of wash and on the amount of solvent needed for the samples you intend to run.

Bottle	Use
Solvent A	Can be the only solvent bottle if usage is less than 2 mL. Either Solvent A or Solvent B must be present.
Solvent A+	Additional Solvent A when usage exceeds 2 mL.
Solvent B	Can be the only solvent bottle if usage is less than 2 mL. Either Solvent A or Solvent B must be present
Solvent B+	Additional Solvent B when usage exceeds 2 mL.
Waste A	Empty. Receives waste from Solvent A and A+ washes. Required if Solvent A is used.
Waste B	Empty. Receives waste from Solvent B and B+ washes. Required if Solvent B is used.
Waste C	Empty. Receives waste from sample washes. Always required.

How many bottles do I need?

Bottles	When to use
0	You are not using pre- or post-injection washes
1	Your solvent need is less than 2 mL **and** You want to use the same solvent for both pre- and post-injection washes
2	Your solvent need is between 2 mL and 4 mL **or** You want to use different solvents for the pre- and post-injection washes
4	Your solvent need exceeds 4 mL

What is my solvent need?

See the *Sampling Techniques* section on your *6850 GC User Information* CD-ROM for information on how to estimate the number of samples you can run using 2 mL of a solvent.

Good laboratory practice suggests that to reduce the possibility of contamination, only half the solvent in the 4-mL bottle be used. The injector will not access the last 2 mL in the bottle.

Solvent levels should always be maintained above the "min solvent level" marked on the solvent bottles.

Filling the turret for use

1. Load all samples to be run into the turret. Make sure that you place them in the turret positions that correspond to the sequence (Control Module or ChemStation control) or Work List (Cerity control). The vial positions are labeled.
2. Load clean, empty waste bottles into the appropriate waste locations. Always load a bottle in the Waste C location.
3. Load your solvent bottles into the solvent locations as needed.

More information

For more detailed information, including operating procedures, general troubleshooting, and maintenance procedures, see your *6850 GC User Information* CD-ROM.