Agilent 7890A Gas Chromatograph

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CAUTION

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WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Contents

1 Introduction

This document provides an overview of the user information materials that are available for your system as well as a quick reference to the 7890A GC keypad and system installation steps.

Important

See your Agilent GC and GC/MS Hardware User Information & Utilities DVD that ships with your instrument for localized versions of Safety and Regulatory, Operation, Maintenance and Troubleshooting information.

Online User Documentation

Now your Agilent instrument documentation is in one place, at your fingertips.

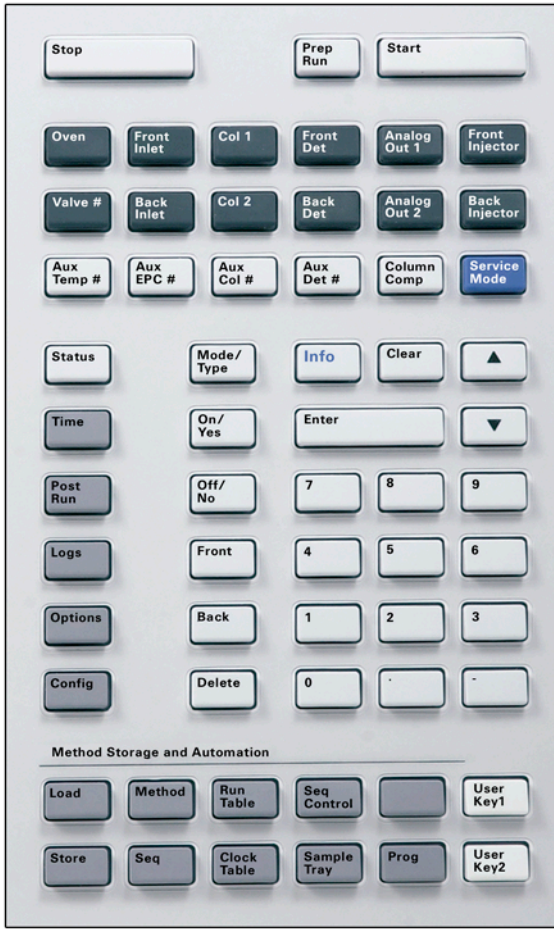
The hardware user information and utilities DVD that ships with your instrument provides an extensive collection of online help, videos, and books for the Agilent **7890A GC**, **7820A GC**, **6890N GC**, **6850 Series GC**, **7000 MS**, **5975 Series MSD**, **7693A ALS**, and the **7683B ALS**. Included are localized versions of the information you need most, such as:

- Getting Familiar documentation
- Safety and Regulatory guides
- Site Preparation checklists
- Installation information
- Operating guides
- Maintenance information
- Troubleshooting details

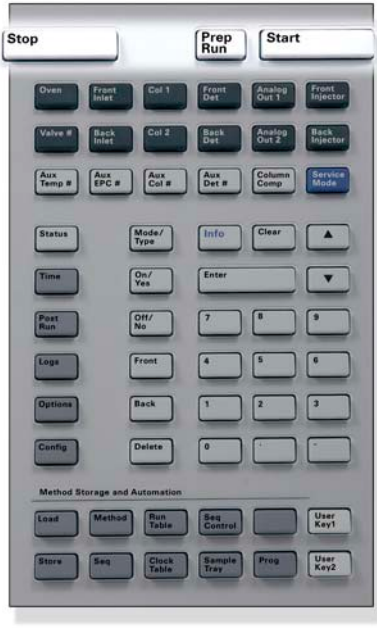
2
Keypad and Status Board

Keypad for the 7890A GC

The next several pages provide an overview of the Agilent 7890A GC keypad functions. See the Agilent 7890A GC Advanced User Guide along with the complete suite of documentation included on the Agilent GC and GC/MS Hardware User Information & Utilities DVD that shipped with your instrument for more detailed information.



The Run Keys



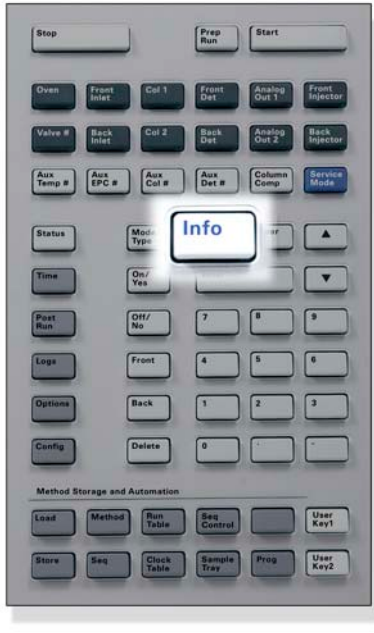
[Stop] Immediately terminates the run. If the GC is in the middle of a run, the data from that run may be lost. Refer to the Agilent 7890A GC Advanced User Guide for information on how to restart the GC after pressing **[Stop]**.

[Prep Run] Activates processes required to bring the GC to the starting condition dictated by the method (such as turning off the inlet purge flow for a splitless injection or restoring normal flow from gas saver mode).

[Start] Starts a run after manually injecting a sample. (When you are using an automatic liquid sampler or gas sampling valve, the run is automatically activated at the appropriate time.)

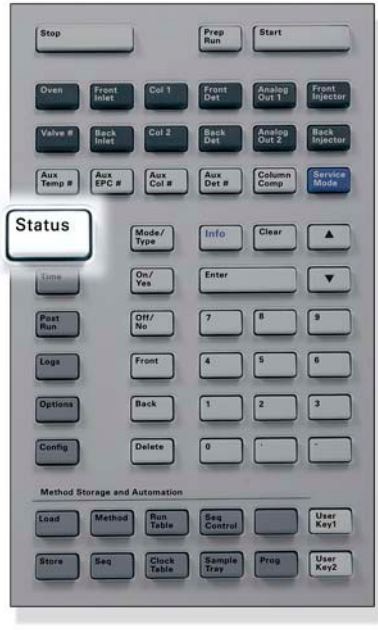
The Info Key

For context-sensitive help, press [**Info**]. For example, if you press [**Info**] on a setpoint entry, the help provided would be similar to: Enter a value between 0 and 350.



[**Info**] Provides context-sensitive help for the currently shown parameter. For example, if **Oven Temp** is the active line in the display (has a < next to it), [**Info**] will display the valid range of oven temperatures. In other cases, [**Info**] will display definitions or actions that need to be performed.

The Status Key



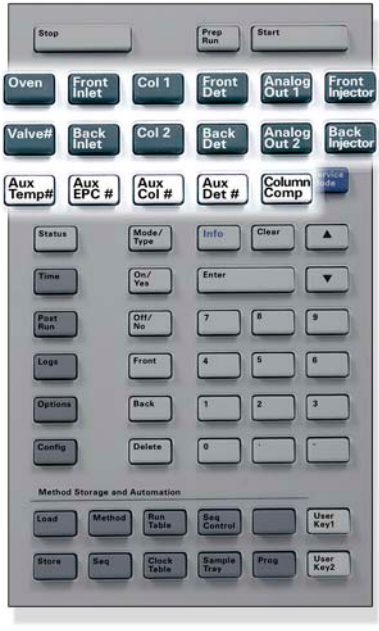
[**Status**] Toggles between setpoint/actual values for most commonly reviewed parameters and displays "ready," "not ready," and "fault" information. When the **Not Ready** status light is *blinking*, a fault has occurred. Press [**Status**] to see which parameters are not ready and what fault has occurred.

The GC Component Keys

These keys are used to set the temperature, pressure, flow, velocity, and other method operating parameters.

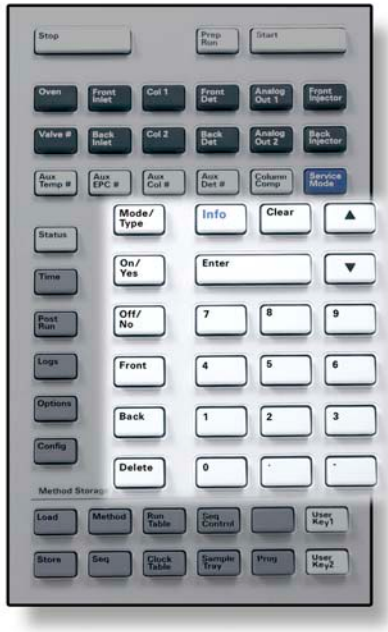
To display the current settings, press any one of these keys. More than three lines of information may be available. Use the scroll keys to view additional lines, if necessary.

To change settings, scroll to the line of interest, enter the change, and press [**Enter**].



[**Oven**]	Sets oven temperatures, both isothermal and temperature programmed.
[**Front Inlet**] [**Back Inlet**]	Controls inlet operating parameters.
[**Col 1**] [**Col 2**] [**Aux Col #**]	Controls column pressure, flow, or velocity. Can set pressure or flow ramps.
[**Front Det**] [**Back Det**] [**Aux Det #**]	Controls detector operating parameters.
[**Analog Out 1**] [**Analog Out 2**]	Assigns a signal to the analog output. The analog output is located on the back of the GC.
[**Front Injector**] [**Back Injector**]	Edits injector control parameters such as injection volumes and sample and solvent washes.
[**Valve #**]	Allows for configuration or control of the gas sampling valve (GSV) and/or switching valves 1 to 8 on or off. Sets multiposition valve position.
[**Aux Temp #**]	Controls extra temperature zones such as a heated valve box, a mass selective detector, an atomic emission detector transfer line, or an "unknown" device. Can be used for temperature programming.
[**Aux EPC #**]	Provides auxiliary pneumatics to an inlet, detector, or other device. Can be used for pressure programming.
[**Column Comp**]	Creates a column compensation profile.

The General Data Entry Keys



[**Mode/Type**]	Accesses a list of possible parameters associated with a component's nonnumeric settings. For example, if the GC is configured with a split/splitless inlet and the [**Mode/Type**] key is pressed, the options listed will be split, splitless, pulsed split, or pulsed splitless.
[**Clear**]	Removes a misentered setpoint before pressing [**Enter**]. It can also be used to return to the top line of a multiline display, return to a previous display, cancel a function during a sequence or method, or cancel loading or storing sequences and methods.
[**Enter**]	Accepts changes you enter or selects an alternate mode.
	Scrolls up and down through the display one line at a time. The < in the display indicates the active line.
Numeric Keys	Enters settings for the method parameters (Press [**Enter**] when you are finished to accept the changes.)
[**On/Yes**] [**Off/No**]	Sets parameters, such as the warning beep, method modification beep, and key click or for turning on or off a device like a detector.
[**Front**] [**Back**]	Identifies configuration settings. For example, when configuring a column, use these keys to identify the inlet and detector to which the column is attached.
[**Delete**]	Removes methods, sequences, run table entries, and clock table entries. [**Delete**] also aborts the adjust offset process for nitrogen-phosphorus detectors (NPD) without interrupting other detector parameters. See the Agilent 7890A GC Advanced User Guide for more details.

The Supporting Keys

[**Time**] Displays the current date and time on the first line. The two middle lines show the time between runs, the elapsed time and time remaining during a run, and the last run time and post-time during a post-run.

The last line always displays a stopwatch. While on the stopwatch line, press [**Clear**] to set the clock to zero and [**Enter**] to start or stop the stopwatch.

[**Post Run**] Programs the GC to do something after a run, such as bakeout or backflush a column. See the Agilent 7890A GC Advanced User Guide for details.

[**Logs**] Toggles among three logs: the Run Log, the Maintenance Log, and the System Event Log. The information in these logs can be used to support Good Laboratory Practices (GLP) standards.

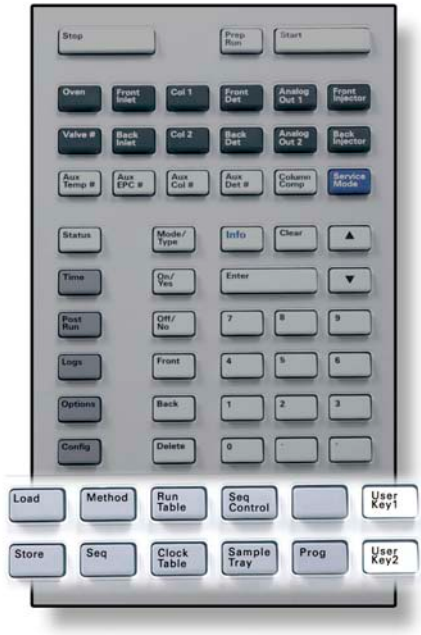
[**Options**] Accesses the instrument parameters setup option, such as keypad, display, and diagnostics. Scroll to the desired line and press **[Enter]** to access the associated entries. See the Agilent 7890A GC Advanced User Guide for details.

[**Config**] Sets up components that are not automatically detectable by the GC but are essential to running a method, such as column dimensions, carrier and detector gas types, makeup gas configurations, sample tray settings, and column plumbing to inlets and detectors. These settings are part of, and are stored with, the method.

To view the current configuration for a component (such as the inlet or detector), press **[Config]**, then the component key of interest.

Method Storage and Automation Keys

These keys are for loading and storing methods and sequences locally on your GC. They cannot be used to access methods and sequences stored by your Agilent ChemStation.



[**Load**] [**Store**] [**Method**] [**Seq**]	Loads and stores methods and sequences on your GC. To load a method, press [**Load**] [**Method**] and select one from the list of methods stored in the GC. See the Agilent 7890A GC Advanced User Guide for more details on these operations.
[**Run Table**]	Programs special events you require during a run. A special event could be switching a valve, for example. See the Agilent 7890A GC Advanced User Guide for details.
[**Clock Table**]	Programs events to occur at a time of day, as opposed to during a specific run. This could, for example, be used to start a shutdown run at 5:00 p.m. every day. See the Agilent 7890A GC Advanced User Guide for details on this function.
[**Seq Control**]	Starts, stops, pauses, or resumes a sequence, or views the status of a sequence. See the Agilent 7890A GC Advanced User Guide for details.
[**Sample Tray**]	Displays whether the tray and/or bar code reader is enabled.
[**Prog**] [**User Key 1**] [**User Key 2**]	Allows you to program a series of keystrokes commonly used for specific operations. See the Agilent 7890A GC Advanced User Guide.

The Service Mode Key

[Service Mode] Accesses maintenance functions and settings, service counters, and diagnostics for the GC.

Keypad Functionality When the GC Is Controlled by an Agilent Data System

When an Agilent data system controls the GC, the data system defines the setpoints and runs the samples. If configured to lock the keypad, the data system can prevent the changing of setpoints. The **Remote** LED is lit when a data system is controlling the GC. Lit LEDs on the status board show the current progress of a run.

When controlled by a data system, the keypad can be used:

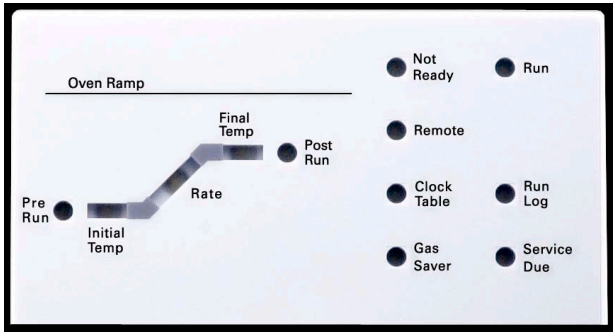
- To view run status by selecting [**Status**]
- To view the method settings by selecting the GC component key
- To display the last and next run times, the run time remaining, and the post-run time remaining by repeatedly selecting [**Time**]
- To abort a run by selecting [**Stop**]

About GC Status

When the GC is ready to begin a run, the display screen shows **STATUS Ready for Injection**. Alternatively, when a component of the GC is not ready to begin a run, the **Not Ready** LED is lit on the status board. Press [**Status**] to see a message explaining why the GC is not ready.

Status board

The status board provides a basic look at what is currently happening inside the GC.



Description	
Not Ready	Lights when the GC is not yet ready to process a sample and *blinks* when a fault occurs. Press **[Status]** to see which parameters are not ready or what faults have occurred.
Run	Lights when the instrument is executing a chromatographic run.
Remote	Lights when the GC is communicating with a remote device (such as the Agilent ChemStation running on a PC). When lit, some functions *are blocked from the keypad* because they are being controlled by the remote device.
Clock Table	Lights when a clock table event has been set. See "Method Storage and Automation Keys" on page 20 for more details on Clock Table events.
Gas Saver	Lights when the front or back gas saver is on.
Run Log	Lights when a run log has entries. Press **[Logs]** to view these entries. This information can be used for Good Laboratory Practice (GLP) standards.
Service Due	Lights when a service counter has reached the limit you specified.
Pre Run	Lights when the GC is in the pre-run state (after **[Prep Run]** is pressed). Indicates that the inlet has been prepared for injection.
Oven Ramp **Rate** **Final Temp**	Lights indicate the progress of the oven temperature program. • blinks if the oven is unable to follow the oven temperature program. • is lit when the GC reaches the temperature specified in the method.
Post Run	Lights when the instrument is executing a post-run operation (e.g., printing a report).

Alert tones

A series of warning beeps sounds before a shutdown occurs. After a short time the component with the problem shuts down, the GC emits one beep, and a brief, numbered message is displayed. For example, a series of beeps sounds if the front inlet gas flow cannot reach setpoint. The message **Front inlet flow shutdown** is briefly displayed. The flow shuts down after 2 minutes. Press **[Clear]** to stop the beep.

A continuous tone sounds if a hydrogen flow is shut down or a thermal shutdown occurs.

WARNING **Before resuming GC operations, investigate and resolve the cause of the hydrogen shutdown. See Hydrogen Shutdown in the Troubleshooting manual for details.**

One beep sounds when a problem exists, but the problem will not prevent the GC from executing the run. The GC will emit one beep and display a message. The GC can start the run and the warning will disappear when a run starts.

Fault messages indicate hardware problems that require user intervention. Depending on the type of error, the GC emits no beep or a single beep.

Blinking setpoint

If a gas flow, multiposition valve, or the oven is shut down by the system, **Off** will blink on the appropriate line of the component's parameter listing.

If there is a pneumatics shutdown or failure in another part of the detector, the detector **On/Off** line of the detector's parameter list blinks.

About Logs

Three logs are accessible from the keypad: the run log, the maintenance log, and the system event log. To access the logs, press **[Logs]** and toggle to the desired log. The display will indicate the number of entries the log contains. Scroll through the list.

Run log

The run log is cleared at the start of each new run. During the current run, any deviations from the planned method (including keypad entries) are listed in the run log table. When the run log contains entries, the **Run Log** LED lights.

Maintenance log

The maintenance log contains entries made by the system when any of the user-defined component counters reach a monitored limit. The log entry contains a description of the counter, its current value, the monitored limits, and which of its limits has been reached. In addition, each user task related to the counter is recorded in the log, including resetting, enabling or disabling monitoring, and changing limits or units (cycles or duration).

System event log

The system event log records significant events during the GC's operation. Some of the events also appear in the run log if they are in effect during a run.

3
7890A GC Installation

The following is a quick reference guide for installing and checking out your new GC.

For detailed instructions on these steps, refer to the documentation included on the Agilent GC and GC/MS Hardware User Information & Utilities DVD that came with your system.

- For installing columns and consumables, see the maintenance information.
- For operating the GC and AutoSampler, see the operating information.
- For running the checkout sample, see the advanced user information.

WARNING **Use extreme caution when handling heavy parts. A two person lift is recommended. Failure to perform a two person lift may result in personal injury.**

7890A GC Installation in 10 Steps

Step 1

Place the GC on the bench and remove the detector caps under the detector cover.

Step 2

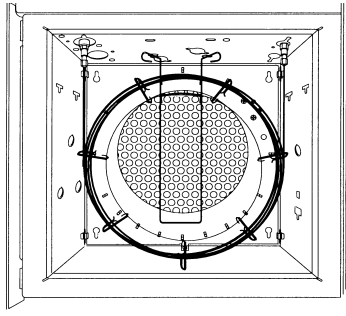
On the back panel, remove the caps and connect the gases.

Step 3

Gas	Recommended	Maximum
Helium	400 kPa (60 psi)	690 kPa (100 psi)
Hydrogen	400 kPa (60 psi)	690 kPa (100 psi)
Air	550 kPa (80 psi)	690 kPa (100 psi)
Nitrogen	400 kPa (60 psi)	690 kPa (100 psi)

Set the gas source pressures and check for leaks.

Step 4

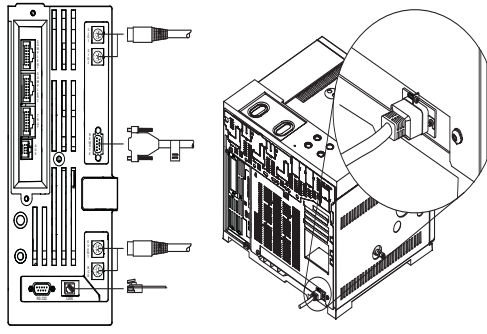


Install the checkout column.

Step 5

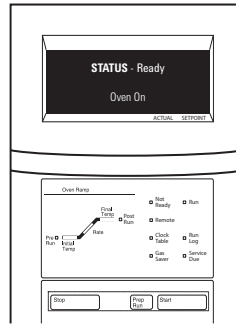
Install the sampler and tray and connect the cables to the back panel.

Step 6



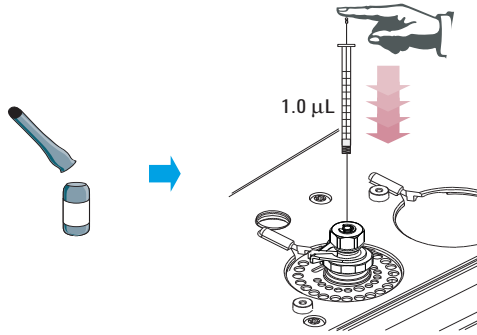
Connect the power cord and the remaining cables.

Step 7



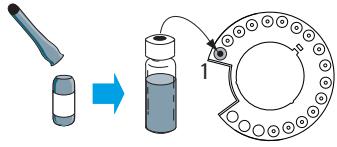
Turn on the GC. Load the checkout method for the inlet and detector you are using. Wait for "Ready" to appear on the display screen.

Step 8



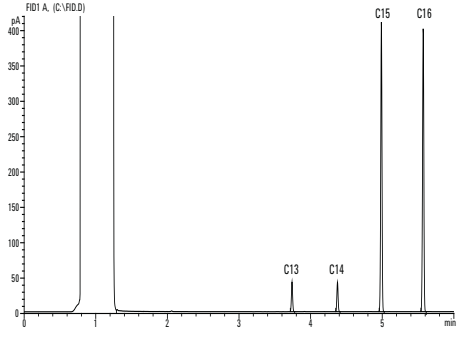
For a **manual injection**: Prepare the checkout sample. Inject the sample into the inlet, then press start.

Step 9



For **automatic sampler injections:** Prepare the checkout sample vial. Load the vial into the sampler, then press start.

Step 10



Compare your results with the checkout chromatogram for your detector.