

GOW-MAC Series 600 Gas Chromatograph (GC)

November 14, 2017

Instrument instructions can be found at:

<http://academic.bowdoin.edu/chemistry/resources/instructions.shtml>

If you have any problems with the instrument or would like to get trained, please contact

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1. Protocol

- a. **Read instructions carefully before using instrument.** Reading the bold sentences in each category will tell you what you need to know to run the instrument.
 - i. Bullets are under the bold sentences when more detail is required.
 - ii. At the end of the instructions is a frequently asked questions/troubleshooting section.

2. Method Development

- a. **Methods are developed using the Edit soft key on the Home page.**
- b. **Depress the Edit key.** You will be presented with a choice of what part of the method to edit. Timed events are set outside the analytical period; these must be set up separately.
- c. **Use the --> key to move the arrow to chromatography method, press Do This.**
- d. **The screen will now show the equipment available for your method.**

3. Isothermal Run

- a. **Move the --> to Detector 1, press Do This.**
- b. **Move the --> key to Detector Temperature, use the Up and Down keys to change the temperature.** Press Accept when the desired temperature is reached.
- c. **Move the --> to Injector 1 on the Edit Chromatography screen and press Do This.**
- d. **Use the Up and Down keys to set the desired temperature.** Press Accept when done.
- e. **Select the Column Oven setting with the --> key and press Do This.**
- f. **When the screen changes select Isothermal and press Do This.** Use the Up and Down keys to raise and lower the oven temperature. When the desired temperature is reached press Accept.
- g. **Press Home on the Main screen.**
- h. **To turn on the heaters, press Action on the Home page.** When the action screen comes up select Heat On.
- i. **Monitor the temperature from the status screen found on the Home page.**

****Note**:** When turning the instrument on: you need to turn on filament and check polarity for column you are using. **Home>Control>Filament>Up** (for on) Polarity (use up and down for negative and positive)

4. Temperature Programmed Run

- a. Selecting Temperature Programmed presents you with a series of two menus.
- b. The first menu will ask you for an initial temperature and time. The initial time is the time the oven will stay at the initial temperature after the run has started.
- c. With the --> alongside Initial Temperature use the Up and Down keys to set the required temperature. Now move the --> alongside the Initial Time and use the Up and Down arrows to set the desired time.
- d. When they are at the desired values, press Accept.
- e. The next screen will ask for the program parameters. The GC is capable of doing a 10 segment ramp. The segments are divided on two screens. The second screen can be reached by pressing Accept. The temperature program will terminate after the last segment with a nonzero value. It will also terminate if the ramp rate for the next segment is set to zero, regardless of what follows.
- f. Move the --> to Ramp Rate in segment 1, use the Up and Down keys to set the first required rate.
- g. Use the --> key to point to upper temperature. Set this with the Up and Down keys.
- h. The next press of the --> key advances to segment 2. If you wish only one ramp make sure the ramp rate for segment 2 is zero.
- i. When the program is set, press Accept until the Edit screen appears.

5. Saving a Method

- a. When the method is complete, press the soft key Save on the Edit page.
- b. You will be presented with a menu which will allow you to save your new method.
- c. First, use the Up and Down keys to select the method number under which the method is to be stored. When this number is chosen press Accept.
- d. Next move to the name field.
- e. Use the Up, Down, and Accept keys to name the method. Set the characters using the Up and Down keys and when correct, press the Accept key to move to the next space.
- f. Now press the Save soft key. You will be asked to overwrite an existing method. Proceed by pressing Save.

6. Retrieving a Method

- a. To retrieve a stored method, press the soft key Retrieve on the Edit page.
- b. A list of stored methods will appear. Use the soft keys to locate the method you would like to retrieve. When it is selected, press Retrieve.
- c. The selected method is loaded and becomes active.

7. Running a Method

- a. Turn the heat on by pressing Home. Then press the Action soft key followed by the Heat On key.
- b. Once a method has been created or retrieved and the heat turned on, the GC starts toward the parameters called for in that method.
- c. During this period the *Not Ready* signals is displayed at the top left of the screen.

- d. As soon as the GC is ready for an injection, the *Ready* message will appear in the top left of the screen.
- e. You are now ready to make an injection and initialize a run by pressing the “Run” key on your Action page.

8. Running a Method When Not Ready

- a. When you want to start a run even though the GC is not ready, you can from the Action page. There are three soft keys on the Action page.
 - i. Run – identical in operation to the Run key.
 - ii. R/C (Run Confirm) – is similar to the run key, except that pressing the Run soft key first and then the R/C will start the GC whether the system is ready or not.
 - iii. Shutdown – this button is used to cool the oven down in a controlled way. That is, the fans remain running, the vent door is open, and the heaters and detectors are turned off.
- b. Therefore, to start a run when the GC is not ready, first go to the Action page, then press the Run key, followed by the R/C key.

Integrator Functions

LIST LIST – lists current run parameters.

[SHFT]+OP:2 – to set up to be able to rerun at different attenuation (answer the questions after **[SHFT]+OP:2**)

REA ENTER – checks system readiness.

SY ENTER – lists current system configuration.

START – starts run.

PLOT – starts plot without integration.

STOP – stops run or plot.

[SHFT] SEQ START – Starts a sequence of runs.

CHT SP 1 ENTER – sets chart speed to 1 cm/min.

[SHFT] ENTER – advances the paper continuously.

LIST TIME ENTER – lists all current timetable entries.

TIME .5 CHT SP 7 ENTER – sets chart speed to 7 cm/sec at 0.5 minutes into the run.

DEL TIME ENTER – deletes entire timetable.

DEL TIME 1 ENTER – deletes all entries for 1 min.

[SHFT] PREP [SHFT] METH – prepares a method step by step.

[SHFT] EDIT [SHFT] METH – edits an existing method.

[SHFT] – press the “Shift” key.

BOLD words indicate a key that is pressed.

Everything else is typed in using the keypad.

****Note**: Keyboard light flashes after changing paper: push ESC so that future commands are accepted.**

Adapted from Series 600 Gas Chromatograph User's Manual by GOW-MAC Instrument Co. 1995.
Adapted from HP 3395 Integrator Operating Manual by Hewlett Packard. 1997.