27 Basic Operations

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Samples

Preparing the GC to run samples

1. Check gas supplies and source pressures.
2. Check the power supply. Restore power if interrupted.
3. Turn on the GC, computer, and communication systems.
4. Check the identity of the installed column(s).
5. If needed, change the column. See "Changing the Column".
6. Check the availability of the samples to be analyzed.
7. Confirm what sequences and methods are required.

Running samples - Manual Injection

1. **Prepare the GC.** See "Preparing the GC to run samples".
2. **Prepare sample(s)** for injection.
3. **Load the desired method.** Press [Load] [Method], then input the desired method number and press [Enter]. See "Procedure: Loading a previously stored method".
4. **Wait for the Ready** prompt.
5. **Load the syringe**.
6. **Simultaneously** inject the sample and press [Start].

   The run light will come on and stay on until the run is completed.

Running samples - GC ALS or Valve Injection

1. **Prepare the GC**. See "Preparing the GC to run samples".
2. **Prepare sample(s)** for injection.
3. **Load sample vials** into the ALS tray or turret, if GC ALS is used. Remember the turret or tray position of each sample vial.
   - To edit injector setpoints, see "Procedure: Editing injector setpoints".
   - To configure the injector, see "Configuring the injector".
   - To edit the sample tray setpoints, see "Procedure: Editing the sample tray setpoints".
   - To configure the bar code reader, see "Procedure: Configuring the bar code reader".
4. **Load the desired sequence**. Press [Load] [Sequence]. Input the sequence number and press [Enter].
   - To create a sequence, see "Creating sequences".
   - To create a sampler subsequence, see "Procedure: Creating a sampler subsequence".
   - To create a valve subsequence, see "Procedure: Creating a valve subsequence".
   - To modify a sequence, see "Procedure: Modifying a previously stored sequence".
5. **Start the sequence**. Press [Seq control]. Scroll to `Start sequence`. Press [Enter].

   The Run light will come on and stay on until the sequence is completed.

Methods

Creating Methods

For more information, see "Analytical Methods".

1. **Set the oven parameters**. Press [Oven], and scroll down.
   - To create an isothermal run, see "Procedure: Setting up an isothermal run".
   - To create a single-ramp program, see"Procedure: Setting up a single-ramp program".
   - To create an oven program with up to six ramps, see "Procedure: Setting up a multiple-ramp program".
2. **Set your column parameters**. Press [Col 1] or [Col 2] and enter:
   a. The column length and diameter (capillary columns). See "Procedure: Configuring a capillary column".
   b. A column mode, if available. See "Procedure: Selecting a column mode".
   c. The column head pressure or column flow. See "Procedure: Configuring a capillary column", "Procedure: Selecting a column mode", or "Procedure: Setting initial flow or pressure or average linear velocity".
3. **Set the inlet parameters**. Press [Front Inlet] or [Back Inlet].
   - Select inlet mode, if available.
   - Enter parameters. For example, set the temperature, pressure, split ratio, split flow, and total flow. See "Using a Split/Splitless Inlet", "Using a Purged Packed Inlet", "Using a Cool On-Column Inlet", "Introducing the Agilent PTV", or "Using a Volatiles Interface".
4. **Set the detector parameters**. Press [Front Det] or [Back Det].
   - Enter parameters. For example, set temperature, hydrogen flow, air flow, makeup gas and flow. See "Operating with EPC", "Operating the TCD",

"Operating with EPC", "Procedure: Operating the μ-ECD", or "Operating the FPD".

5. **Save these parameters as a method**. Press [Store] [Method]. Input a method number (1 through 9), then press [Enter].

Setting a Column Flow Rate or Pressure

1. Set the new value in the column control table. See "Procedure: Setting initial flow or pressure or average linear velocity".
2. To save the change, press [Store] [Method]. Input a method number (1 through 9), and press [Enter].

Sequences

Creating sequences

To create a sequence

1. **Press [Seq]** to open the sequence control table.

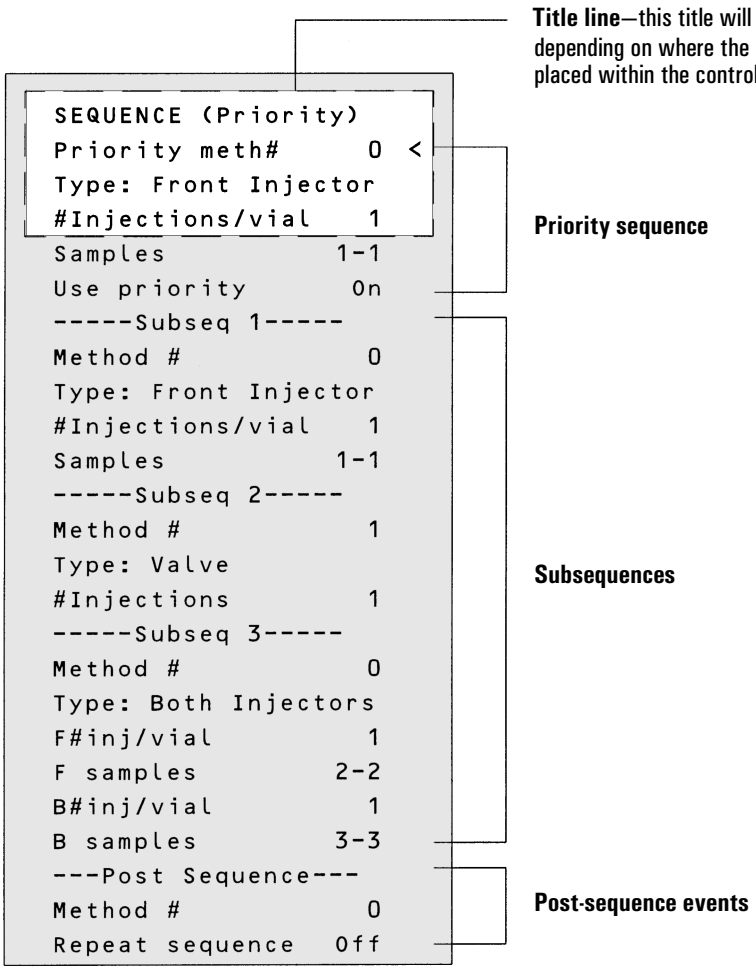

Figure 92 Example sequence table

2. **Scroll to `SEQUENCE (Priority)`**. Use the priority sequence (set it to `On`) only if you want to interrupt a running sequence to run urgent samples now. Otherwise set it to `Off`. See "Priority sequence".

3. **Scroll to `Subseq 1`**. Set the sequence type (sampler or valve) using the [Mode/Type] key. Define the samples to be run, where they are located, and what method to use for them.

   - For details about creating a sampler subsequence, see "Procedure: Creating a sampler subsequence".
   - For details about creating a valve subsequence, see "Procedure: Creating a valve subsequence".
   - For general information about sequences, see "Analytical Sequences".

4. **Create additional subsequences** as needed.

   - Create a subsequence for each set of valve or automatic liquid sampler samples you wish to run with a given method.
   - Create a subsequence for each set of samples that require a different method.
   - You can create up to five subsequences.

5. **Set any desired post sequence events**. Scroll to `SEQUENCE (Post Seq)`.

   - Input the Post Sequence method number. Enter `0` to not load a method.
   - To repeat the sequence indefinitely, turn `Repeat Sequence` On.
   - See "Post Sequence" or "Procedure: Setting the Post Sequence events" for more information.

6. **Store the completed sequence**. See "Procedure: Storing a sequence".

For more information, see "Analytical Sequences".

Start/Stop/Pause a sequence

To control a sequence, access the Sequence control table by pressing [Seq Control].

What do you want to do?	See
Start a sequence	Procedure: Starting/running a sequence
Stop a sequence after the current run	Procedure: Stopping a sequence
Pause a sequence	Procedure: Pausing and resuming a sequence
Run a priority sample now, then continue the sequence	Priority sequence
Abort the run and sequence immediately	Press the [Stop] key to immediately halt the current run and the sequence. See Aborting a sequence for more details.

Maintenance

Changing the Column

To change a column:

1. **Select the appropriate fittings** and adapters for your:
   - Capillary columns, see "Ferrules for capillary columns".
   - Packed metal columns, see "Fittings" and "Ferrules for packed metal columns".
   - Packed glass columns, see "Ferrules and O-rings for glass packed columns".
2. **Prepare your column**.
   - If using a capillary column, see "Procedure: Preparing capillary columns".
   - If using a packed metal column, see "Preparing packed metal columns".
3. **Lower the temperatures** of the oven, inlet, and detector to <40°C.
4. **Check the liner**. Be sure you have the correct liner (or other inlet hardware) installed. For instructions on choosing and installing liners, see "Liners".

Inlet	Refer To
Split/splitless	"Liners"
Purged packed	"Liners and inserts"
Cool on-column	"Hardware"
Programmed temperature vaporization	"Inlet adapters"

5. **Install the column**.

Column Type	Inlet or Detector	Refer To
Capillary	Split/splitless inlet	"Procedure: Installing capillary columns in the split/splitless inlet"
	Cool on-column inlet	"Procedure: Installing capillary columns in the cool on-column inlet"
	Purged packed inlet	"Procedure: Installing capillary columns in the purged packed inlet"
	Programmed temperature vaporization inlet and Volatiles interface	"Procedure: Installing capillary columns in the PTV inlet and Volatiles Interface"
	FID NPD	"Procedure: Installing capillary columns in NPD and FID detectors"
	TCD	"Procedure: Installing capillary columns in the TCD"
	µ-ECD	"Procedure: Installing capillary columns in the µ-ECD"
	FPD	"Procedure: Installing capillary columns in the FPD"
Packed Metal	Any	"Procedure: Installing an adapter in a detector fitting" and "Procedure: Installing packed metal columns"
Packed Glass	Any	"Procedure: Installing glass packed columns"

6. **Condition your column**, if needed. See "Conditioning columns".
7. If using a capillary column, configure (define) it if desired. See "Procedure: Configuring a capillary column".

Now may be a good time to check your inlet septum and change it if needed.

Checking Performance

To check the performance of your GC, run the recommended sample mixture for your detector type as described below.

1. **Install the checkout column**. For the FID, TCD, NPD, µ-ECD, and FPD, use an HP-5, 30 m x 0.32 mm x 0.25 µm capillary column (part number 19091J-413).
2. **Install the appropriate liner or insert**, if needed:

Inlet	Item
Split/splitless	Liner, part no. 5062-3587 (splitless)
Purged packed	Liner, part no. 5181-3382 (deactivated)
Cool on-column	Insert, part no.19245-20525
Programmed temperature vaporization	Baffled liner, part no. 5183-2037 320 μm adapter part no. 5182-9761

3. **Set the checkout conditions** on your GC.

Detector Type:	Refer to:
FID	"FID checkout conditions"
TCD	"TCD checkout conditions"
NPD	"NPD checkout conditions"
μ-ECD	"μ-ECD checkout conditions"
FPD	"FPD checkout conditions"

4. **Prepare your sample(s)**.
5. When the GC is ready, **make the injection and start the run**.
   - If using manual injection, see "Running samples - Manual Injection".
   - If using sampler injection, see "Running samples - GC ALS or Valve Injection".

6. **Compare your result** against the appropriate reference chromatogram:

Detector Type:	Refer to:
FID	"Typical FID checkout chromatogram"
TCD	"Typical TCD checkout chromatogram"
NPD	"Typical NPD checkout chromatogram"
μ-ECD	"Typical μ-ECD checkout chromatogram"
FPD	"Typical FPD checkout chromatograms"

Remember that the reference chromatogram is typical and is only intended to serve as a guide.