

840 Shutdowns

When your 6890 GC encounters a Shutdown condition, a popup message appears on the display. The popup message is numbered and contains a brief description of the nature of the problem. This chapter provides more thorough information about the problems that cause the GC or a component of the GC to shut down.

The chapter presents the messages numerically according to the popup message number.

Shutdown 1—Oven shut off

The amount of power required to keep the oven at setpoint exceeds the expected power for that temperature. This error puts the 6890 GC in a not ready state. The oven flaps open half way (if they are operating correctly). You must turn the 6890 GC off and then on again or change the oven temperature to restore operation.

The following may be causing the error:

- Check the oven flap on the back of the 6890 GC.
The oven flap should be open when cooling (for temperatures ranging between 50 and 250°C) or closed completely to reach temperature setpoints. If the oven flap is stuck open completely or partially, it is not operating correctly.
- Check for a leak source in the oven (for example, missing insulation around an inlet or detector location or a leak in the door).
- Check for excessive load in the oven (for example, a very large packed column).
- The oven heater or the heater electronics are not operating correctly.

Shutdown 2—Oven cryo shutdown

Cryogenic shutdowns prevent liquid coolant from being wasted when the GC is unable to start a run. A cryo shutdown does not indicate that the cryogenic cooling system is malfunctioning. Instead, one of the following could be the cause:

- ❑ A “cryo timeout” has occurred.

A timeout occurs if the GC oven has reached its temperature setpoint but the amount of time you specified for the cryo timeout setpoint has elapsed without a run beginning.

Turn the oven off and then on again or change the setpoint to restore normal operation. Then, turn the timeout option off to prevent the shutoff from reoccurring, or lengthen the timeout period.

- ❑ A “cryo fault” has occurred.

Cryogenic cooling has been on for over 16 minutes, but the oven has not reached its temperature setpoint.

Check the level of the cryogenic fluid, and replace the supply if it is too low for proper cooling.

The cryo valve may be stuck open or closed. If your fluid supply is adequate, the valve may be broken or the electronics driving it may be malfunctioning (this is a less likely cause).

Shutdown 3—Front inlet pressure shutdown

This message indicates the inlet failed to reach its setpoint in the allotted time or cannot maintain its pressure setpoint. The inlet's flows shut off (split/splitless inlets go to purge mode) and the instrument goes to a not ready state until the problem is corrected and the inlet reaches the pressure setpoint.

For EPC inlets, the allotted time to reach the pressure setpoint before the inlet shuts down varies with the type of inlet as shown in the following table.

Type of inlet	Lapse in time before shutdown
Purged packed, cool on-column	2 minutes
Split/splitless	5.5 minutes
Auxiliary	4 minutes

The following may be causing the error:

- ❑ The initial gas supply pressure is too low to reach the setpoint.
Make sure that the initial gas supplies are high enough to support the pressure and flow setpoints. The pressure at the initial supply should be at least 5 psi (10 psi for the split/splitless inlet) greater than the desired setpoint.
- ❑ A large leak is present somewhere in the system.
Use an electronic leak detector to find leaks; correct them. Refer to chapter 200 for the leak test procedure for your inlet. In addition to checking the gas supply connections and the inlet, remember that the column could be broken, which would cause a large leak.
- ❑ If you are using the gas saver, make sure that the gas saver flow rate is high enough to maintain the highest column-head pressure during a run.
- ❑ The flow is too low for the column in use.
Make sure that the flow is adequate for the column you are using.

Shutdown 4—Front inlet flow shutdown

- The column is plugged or not installed correctly.
Check the column and the column installation.
- The inlet's pressure sensor is not operating correctly.

If you are using a split/splitless inlet:

- The split ratio is too low. Increase the amount of split flow.
- The inlet's proportional control valve is stuck open or closed because of contamination or another fault.

If you are using a purged packed or cool on-column inlet:

- The inlet's control valve is stuck closed because of contamination or another fault.

Shutdown 4—Front inlet flow shutdown

This message indicates the front inlet failed to reach its flow setpoint in the allotted time or cannot maintain its flow setpoint. When you are operating in flow-control mode, the inlet has 2 minutes to reach the setpoint before shutdown. The instrument will be not ready until the problem is corrected and the inlet reaches the flow setpoint.

See Shutdown 3—Front inlet pressure shutdown for a list of potential causes and solutions.

Shutdown 5—Back inlet pressure shutdown

See Shutdown 3—Front inlet pressure shutdown for a list of potential causes and solutions.

Shutdown 6—Back inlet flow shutdown

See Shutdown 4—Front inlet flow shutdown for a list of potential causes and solutions.

Shutdown 7—Front detector fuel gas shutdown

The front detector's (EPC version) fuel gas was unable to reach or maintain the pressure setpoint in the allotted 2 minutes. The detector gases are shut off and the instrument will be not ready until the problem is corrected and the detector reaches the pressure setpoint.

The following may be causing the error:

- The initial gas supply pressure is too low to reach the setpoint.
Make sure that the initial gas supplies are high enough to support the pressure and flow setpoints.
- A leak is present somewhere in the system.
Use an electronic leak detector to find leaks; correct them. In addition to checking the gas supply connections and the inlet, remember that the column could be broken, which would cause a large leak. It is unlikely that the detector itself is the source of the leak.
- The detector's proportional control valve is stuck open or closed because of contamination or other fault.

Shutdown 8—Front detector air/ref shutdown

The front detector's (EPC version) air/reference gas is unable to reach or maintain the pressure setpoint. All the detector gases will shut off, and the instrument goes not ready.

See Shutdown 7—Front detector fuel gas shutdown for a list of potential causes and solutions.

Shutdown 9—Front detector makeup shutdown

The front detector's (EPC version) makeup gas is unable to reach or maintain the pressure setpoint. All the detector gases will shut off, and the instrument goes not ready.

See Shutdown 7—Front detector fuel gas shutdown for a list of potential causes and solutions.

Shutdown 10—Back detector fuel gas shutdown

See Shutdown 7—Front detector fuel gas shutdown for a list of potential causes and solutions.

Shutdown 11—Back detector air/ref shutdown

See Shutdown 7—Front detector fuel gas shutdown for a list of potential causes and solutions.

Shutdown 12—Back detector makeup shutdown

See Shutdown 7—Front detector fuel gas shutdown for a list of potential causes and solutions.

Shutdown 13—Pres aux 3 shutdown**Shutdown 14—Pres aux 4 shutdown****Shutdown 15—Pres aux 5 shutdown**

The specified pneumatics aux module cannot maintain the pressure setpoint. All the detector gases shut off, and the instrument goes not ready.

See Shutdown 3—Front inlet pressure shutdown for a list of possible causes and solutions.

Shutdown 16—Multiposition valve not switching

This message appears when the multiposition valve has tried to switch twice without success.

The valve will shutdown and report that it is not ready (not at setpoint). Clear the shutdown by entering a new setpoint.

The following may be causing the error.

- The valve is not connected to the correct valve driver or is not connected at all. Connect the valve to the correct valve driver.
- The valve is stuck.
- The switching time is too short for the speed of the valve.

Shutdown 16—Multiposition valve not switching

The valve could be switching more slowly than usual because it is sticking slightly or the sample is viscous. Increase the length of the switching time.

Shutdown 17—Can't reach setpoint of multipos valve

The valve is switching to the wrong position or is unable to switch to the setpoint position. The valve will shut down and report that it is not ready (not at setpoint). Clear the shutdown by entering a new setpoint.

The following may be causing the error.

- The valve position is incorrect.

A setpoint was entered that the valve is unable to reach. For example, position ten was entered for an eight-port valve. Enter a correct valve position setpoint.

- The Invert BCD setpoint is incorrect.

With most valves, the invert should be On. If the BCD setpoint is already On and you experience a shutdown, set it to Off.

Shutdown 18—Front inlet cryo shutdown

Shutdown 19—Back inlet cryo shutdown

Either a cryo timeout (zone has been waiting at setpoint longer than the timeout setpoint) or a cryo fault (zone has not reached setpoint in 16 minutes) has occurred. The zone is turned off and the actual temperature display flashes OFF. To reset, cycle the zone power or change the setpoint.

Shutdown 20—Aux 1 cryo shutdown

Shutdown 21—Aux 2 cryo shutdown

See Shutdown 18—Front inlet cryo shutdown.

Shutdown 22—Front inlet heating too slowly; temperature shut off**Shutdown 23—Back inlet heating too slowly; temperature shut off**

The inlet has been heating longer than the allowable time without reaching the setpoint. The zone is shut down and the actual temperature display flashes OFF. To rest, cycle the zone power or change the setpoint.

- This could be a bad thermal sensor, where the reading is incorrect but the value is within the valid temperature range.
- A failed or defective heater can cause this condition.

