

Initial Power-Up

Since the TCD is a concentration-dependent detector, the lower the flow rate through the detector, the higher the sensitivity. Column diameter will determine the optimum column flow rate.

The microvolume TCD is designed for the lower flow rates typical for capillary columns, and achieves best sensitivity at rates below 10 ml/min. Since the filaments are maintained at constant temperature, the detector can be operated at extremely low flow rates (less than 0.5 ml/min) without damage to the filaments.

A - B referenced mode

Flow Rate Settings

1. Measure the column flow at the detector's Channel A out. The optimum flow rate is in the range of 4 - 20 mL/min, with the actual rate dependent on the type of column used.
2. Measure the reference gas flow at Channel B out. It should be as close as possible to the GC column flow. Use a fixed flow restrictor or a good quality flow controller to match the the carrier gas and reference gas flows.
3. Once the flows have been established, make sure the filament switch and the main power switch are in the OFF position, and plug the power cord into an AC main outlet.

Initial Conditioning

4. Turn on the control module main power switch and set the detector temperature to 220°C.
5. Turn on the filament power switch and set both filament temperature knobs at 8.0.
6. Condition the detector by allowing it to bake at these settings for at least 12 hours.

Temperature Settings

7. After the initial bakeout period, set the detector temperature at 100°C or at the column temperature plus 30°, whichever is higher.
8. Set the filament temperatures at least 50° and as much as 100° higher than the detector temperature. Refer to **Figure 3** on page 5, which outlines the relationship between the filament temperature knob settings and the actual filament temperature.

Detector sensitivity increases as the temperature differential between the detector and the filaments increases, but filament life decreases as its temperature increases. Thus, the detector temperature should be set as low as possible, determined by the boiling point of the highest boiling component of the sample.

9. Once all temperatures are set, allow plenty of time for the system to equilibrate, evidenced by a stable baseline. Typical equilibration time for going from a cold start-up to 130°C detector temperature is approximately five hours. Detector temperature changes take much longer to equilibrate than do filament temperature changes.