



Gas-Phase Microfluidics Product Group and its applications

1. [QuickSwap accessory](#) (G3185B) for vent-free removal of columns
2. [Purged Effluent Splitter](#) (G3180B) for inert, leak-free column effluent splitting at high temperature
3. [Deans Switch device](#) (G2855B) for the analysis of complex samples

1. QuickSwap Accessory for Agilent GC/MSD

The [QuickSwap microfluidic switch](#) is available as accessory G3185B. It mounts at the end of the MSD transfer line inside the GC oven and requires an accurately-regulated inert purge gas supply.

Agilent recommends the following configurations.

New GC/MSD Systems

For Agilent 6850 Series II and 6890 GCs only:

- Accessory G3185B QuickSwap kit - includes the microfluidic device and consumables

And;

- GC Option #885 - consists of auxiliary electronic pneumatics control (EPC) plus factory routing of a purge gas line into the GC oven

Retrofitting Existing GC/MSD Systems

- Accessory G3185B QuickSwap kit - includes the microfluidic device and consumables

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- Pressure control device is required. If not present, order field upgrade:
Either -auxiliary EPC accessory (G3349B for 6850 GC, G1570A for 6890 GC)

OR

- pneumatics control module (PCM) (G2317A, 6890 only)

QuickSwap Advantages

- No venting or cooling Agilent 5973 and 5975 MSDs when exchanging columns
- Column protected from air during inlet maintenance
- Backflush mode for increased throughput

Backflushing Additional Benefits

- Saves analysis time by discarding high-boiling point compounds from the column after the peaks of interest have eluted – see Figures 1 and 2 below
- Longer column life through:
 - reduced high temperature exposure
 - removal of high-boilers
 - protection from air and water at high temperatures
- Low chemical background avoids:
 - "ghost" peaks
 - "wrap-around" of late eluters from previous runs
 - stationary phase decomposition peaks
- Less contamination of the MSD source results in:
 - longer interval between source cleanings
 - higher stability of calibrations

Example of Column Backflush

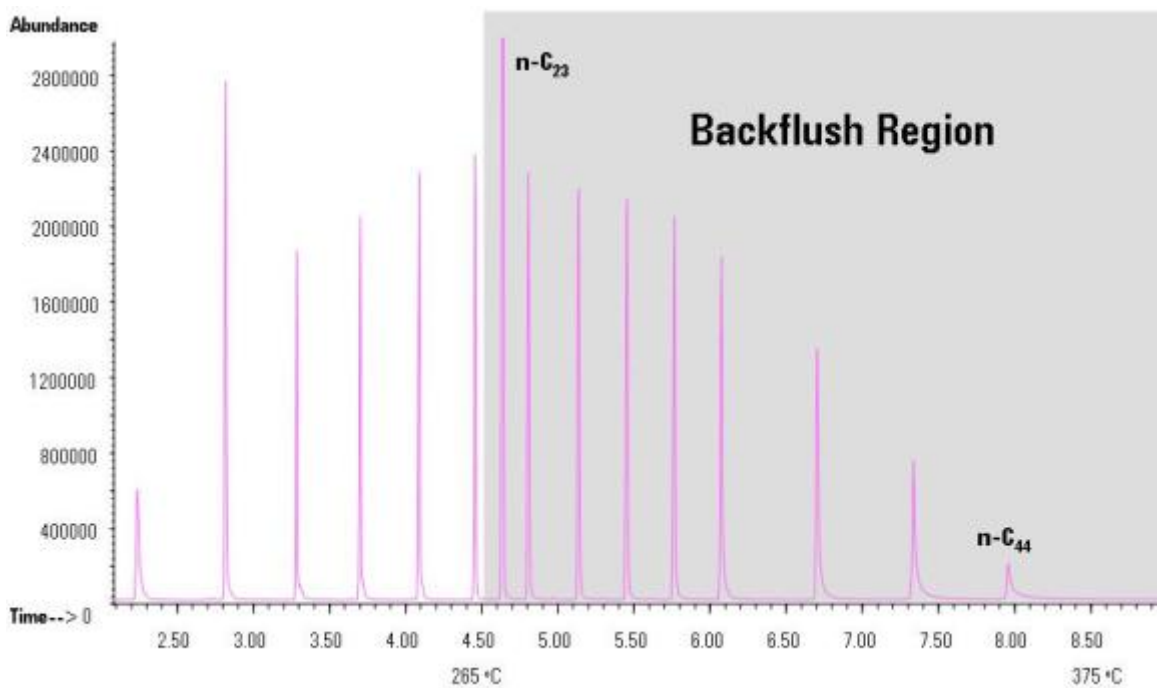


Figure 1: Analysis without backflushing. The shaded area contains the unwanted high-boilers.

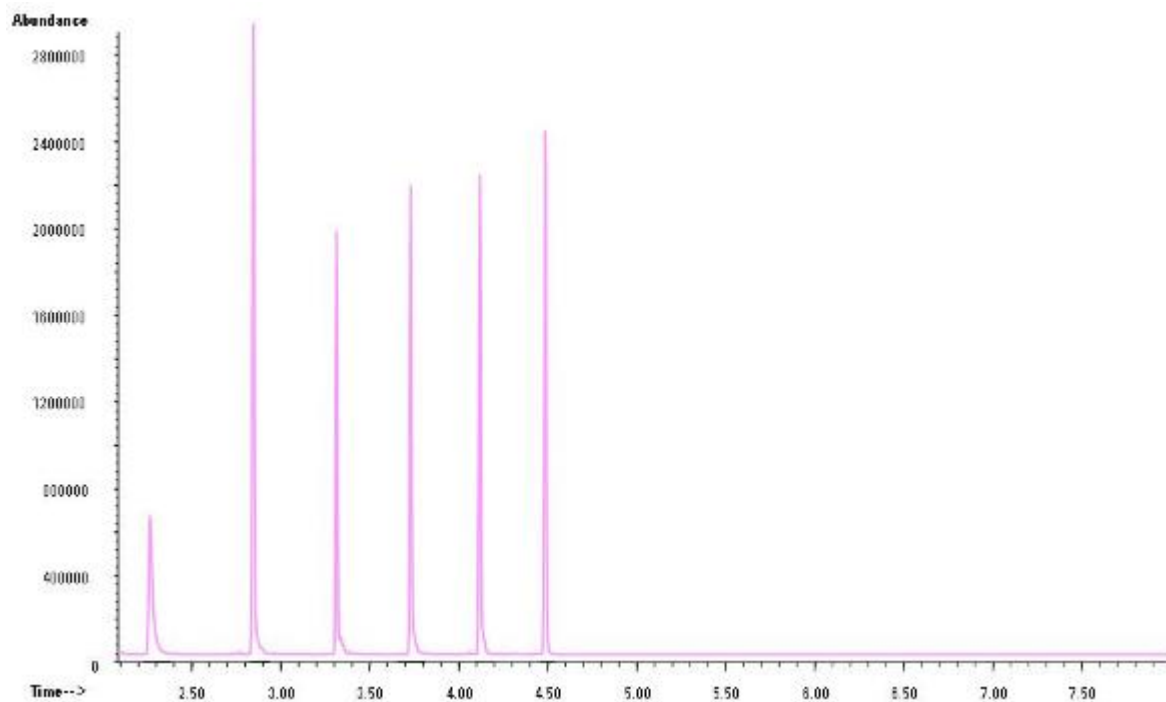


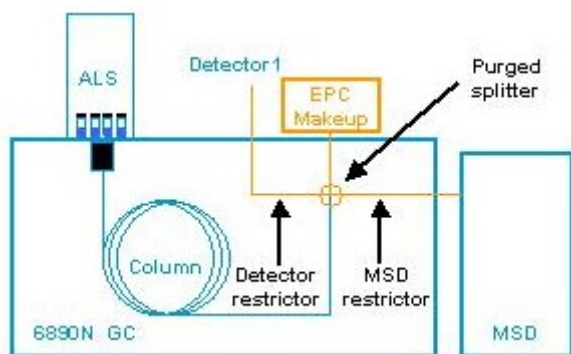
Figure 2: Results of backflushing - high molecular weight matrices can help to reduce total GC run time and cycle time significantly; in this case the backflush starts at 4.52 minutes.

The chromatograms above represent an analysis up to C44. Backflushed materials reverse through the column and exit the split vent where they are trapped on the split vent trap. Dirty matrices can be eliminated in this way protecting the entire analytical column and ion source from contamination.

2. Gas-Phase Microfluidics Purged Column Effluent Splitter

The Column Effluent Splitter is available as accessory G3180B and as option #889 on the 6890N GC.

The microfluidic splitter uses the same diffusion-bonded plate technology as the Deans Switch to create an inert, easy-to-use, leak-free, high-temperature column effluent splitter. The splitter uses auxiliary electronic pneumatics control (EPC) for constant pressure makeup (6890N option 301). This EPC makeup can be pressure programmed at the end of a run to higher pressure, while at the same time, the inlet pressure is lowered to near ambient. This causes the flow in the column to reverse, back-flushing heavy materials out the split vent of the inlet. The EPC also allows column changing and maintenance without venting detectors such as the MSD.



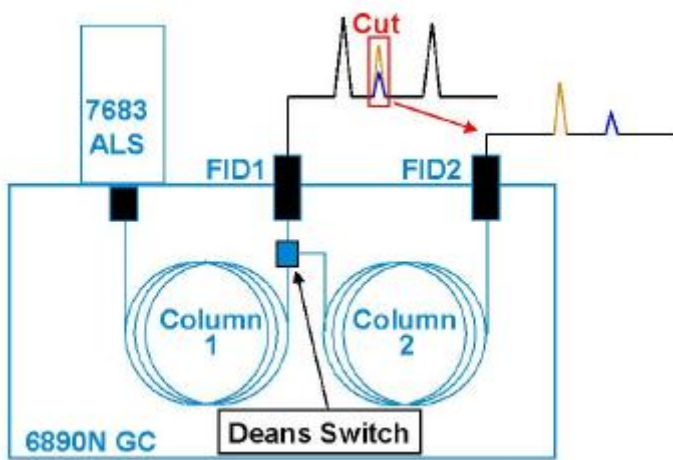
3. Gas-Phase Microfluidics Deans Switch

The Deans Switch device is available as accessory G2855B and option #888 on the 6890N GC.

In complex sample matrices, there often are too many overlapping compounds to allow resolution of the compound or compounds of interest. In these cases, additional selectivity is needed – but using selective detectors or sample preparation may be impractical or too expensive.

The 6890 GC's heart-cutting capability with the Deans Switch (G2855B) allows simplified, fast, and precise 2-dimensional (2-D) GC analysis. Peaks of interest from one column are "cut" onto another column having a different stationary phase. As such,

compounds that might co-elute with analyte on the first column are separated from analyte on the second column (see figure below).



All you need is Agilent's Deans Switch Kit (part number G2855B; includes hardware and flow calculator software), an Agilent 6890 GC with EPC, Pneumatics Control Module (or Auxiliary EPC, 6890N option 309), two columns and two detectors (See Ordering details at the link below for additional information).

<http://www.chem.agilent.com/Scripts/Generic.ASP?IPage=7081>

Features

The following features are common to both the purged column effluent splitter and Deans switch products.

- Micro fluidics hardware surfaces that contact sample are deactivated to minimize active sites
- Balancing gas flows done with EPC and flow calculator or supplied spreadsheet examples
- Easy column/restrictor connections increase reliability and minimize dead volume and active sites
- The Deans Switch product minimizes retention time drift greatly (as compared to other techniques) with modern GC oven and EPC
- The Purged Splitter product finally gives the gas chromatographer an easy-to-use, leak-free, high-temperature connector for reliably splitting column effluent between two detectors.