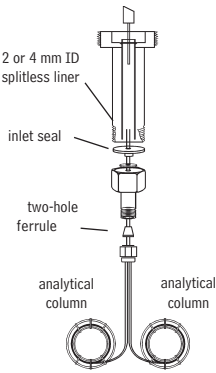
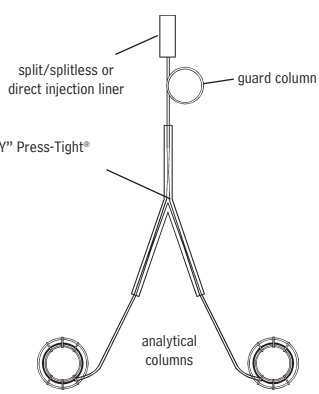
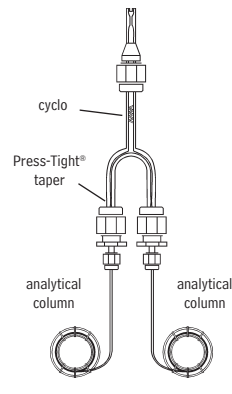


Dual-Column Analysis: Which technique is right for you?



Jamie Hubler
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Split/Splitless Injection	Split/Splitless or Direct Injection	Direct Injection
<p>Two-hole ferrules allow dual-column confirmational analysis in the same split/splitless inlet.</p>	<p>The "Y" Press-Tight® configuration allows dual columns to be used in either a split/splitless or direct injection inlet.</p>	<p>The direct injection "T" allows two 0.32 or 0.53mm ID columns to be connected to one 1/4-inch packed column inlet.</p>
 <p>2 or 4 mm ID splitless liner inlet seal two-hole ferrule analytical column analytical column</p>	 <p>split/splitless or direct injection liner guard column "Y" Press-Tight® analytical columns</p>	 <p>cyclo Press-Tight® taper analytical column analytical column</p>
<p>0.25 and 0.32mm ID columns can be used with standard 1/16-inch inlet fittings (cat. # 20633). 0.53mm ID columns require 1/8-inch fittings (cat. # 20645) to allow both columns to fit side by side in the injector. Use either straight or extended gooseneck split/splitless liners.</p>	<p>The "Y" Press-Tight® configuration offers versatility because it allows any diameter column or guard column to be connected to a split/splitless or direct injection liner.</p>	<p>The direct injection "T" incorporates a glass spiral to ensure complete vaporization prior to splitting the sample onto two columns. The dual sealing mechanisms increase ease of use and confidence in the connection relative to the "Y" Press-Tight® configuration.</p>

Analyzing the same sample on two columns of different polarity can increase both the qualitative and quantitative reliability. However, having to repeat the analysis on a second column will significantly reduce sample throughput. The simple solution to improving analytical reliability without reducing sample throughput is to use a simultaneous dual-column technique. This involves connecting two capillary columns to one GC inlet and connecting each column to its own detection system. Both columns are usually of the same internal diameter so the flow rates are balanced and similar amounts of the analytes are directed onto each column. This approach will result in confirmational analysis without reducing sample throughput. Simultaneous dual-column analysis has become a more routine technique used by laboratories involved with complex analyses in complicated matrices.

Split or Splitless Injectors

Split or splitless injections are the easiest dual-column analyses to perform. Both columns can be inserted into the split/splitless inlet fitting and terminate in the inlet liner. Columns with internal diameters of 0.32mm or less (or 0.5mm OD) can be inserted directly into the 1/16-inch standard capillary fitting (cat.# 20633, page 202) by using a two-hole capillary ferrule. Columns with internal diameters of 0.53mm cannot be inserted into a standard 1/16-inch capillary fitting because the outside column diameter (0.8mm) is too large for both to fit simultaneously. Special fittings that use a 1/8-inch fitting and 1/8-inch, two-hole ferrule can be used for 0.53mm ID column (cat.# 20645, page 202).*

On-column or Direct Injections

On-column or direct injections require a Press-Tight® connection to the inlet liner. Usually a section of 0.53mm ID guard tubing is attached to one leg of a Press-Tight® "Y" connector (cat.# 20405, page 203). Analysts must use columns of equivalent length and ID so that the flow through both legs of the "Y" is similar, or the detector response will differ. Another approach is to use a Dual-Column Direct Injection Tee (cat.# 20412, page 201) or *mini-Lam* Direct Injection Tee (cat.# 20436, page 201), that is installed into the injector, with each column connected to the remaining legs of the tee. The Dual-Column Direct Injection Tee has a vaporization chamber to reduce sample backflash and a glass spiral to ensure sufficient vaporization and to reduce discrimination or preferential splitting. The *mini-Lam* Direct Injection Tee is similar—it incorporates an inverted cup in place of the glass spiral. More information on these types of injection tees is given on the facing page.

*Instrument-specific fittings for performing dual column analyses can be found in the Supplies for Agilent and Supplies for Varian sections.