



## Connecting a Guard Column to an Analytical HPLC Column - Tech Information

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A reliable connection between a guard column and the analytical column protects the main stationary phase without sacrificing efficiency.

The recommended approach is to use a purpose-built column coupler rather than improvised tubing assemblies, which can introduce unswept volume and degrade performance.

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### Preferred Method: Use a Column Coupler

Column couplers are designed to join a guard column holder directly to the analytical column with precisely machined, perpendicular cuts and minimal internal volume. This prevents mixing pockets and preserves plate count.

- Why it matters: Properly made, low-volume unions reduce dispersion at the junction and minimize peak broadening.
- Sizing guidance: Select the coupler bore based on expected flow; higher flows justify a slightly larger through-hole to limit backpressure without adding excess volume.

Example recommendations: up to 0.5 mL/min → 0.005" ID; ≤1.0 mL/min → 0.007" ID; 1–2 mL/min → 0.010" ID; ≥2 mL/min → 0.020" ID.

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### Alternative (Not Recommended): PEEK Tubing + Ferrules

Although you can connect using short PEEK tubing and ferrules, this approach is not strongly recommended because achieving perfect, burr-free, perpendicular cuts is difficult. Even small cutting or seating errors create unswept dead volume, leading to band broadening, ghost peaks, and sensitivity loss.

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### Assembly Tips to Maintain Efficiency

Regardless of hardware choice, follow these best practices to avoid extra-column dispersion:

- Keep the distance short: Minimize the gap between the guard holder and the analytical column to limit dispersion and delay volume.
- Ensure perpendicular faces: Use unions/couplers supplied with square-cut tubing faces to prevent gaps at the sealing surface.
- Verify tight, coaxial seating: Re-make connections if any play is detected; misalignment creates mixing pockets.

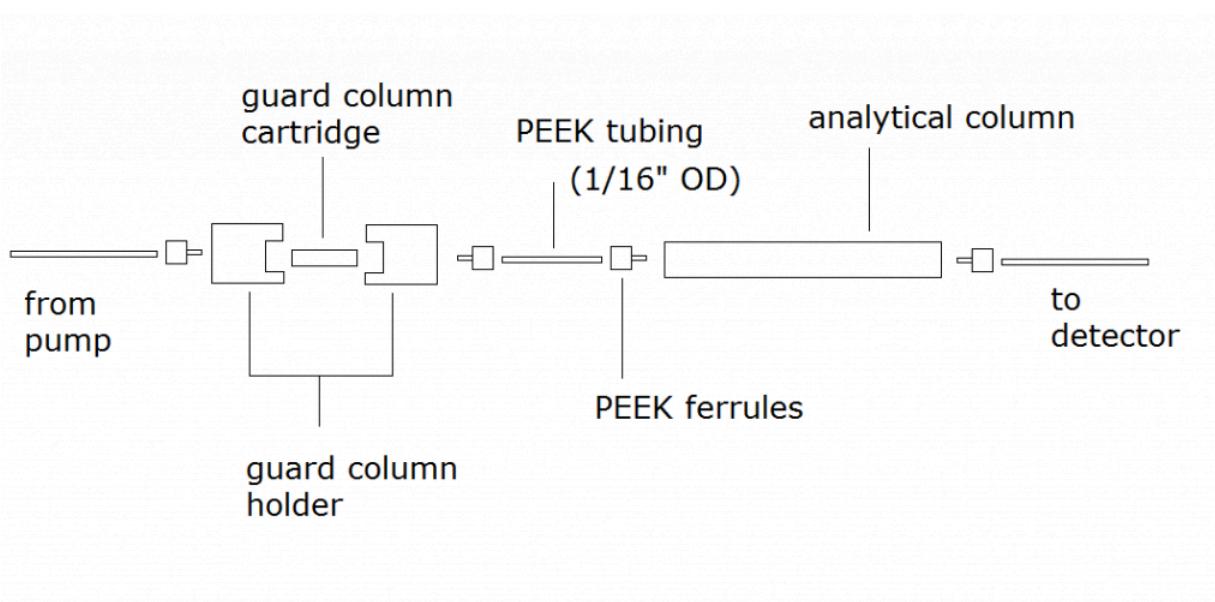
- Confirm leak-free installation: After assembly, run a low-pressure leak test (e.g., lint-free wipe/Kimwipe) and tighten incrementally until dry.

## Conclusion

For dependable performance, connect your guard column holder to the analytical column using a dedicated column coupler sized for your flow rate.

This minimizes unswept volume and preserves chromatographic efficiency, whereas ad-hoc PEEK tubing assemblies often introduce band-broadening artifacts.

The connections would look like this:



Click [HERE](#) for column coupler ordering information and pictures.



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**MicroSolv Technology Corporation**

9158 Industrial Blvd. NE, Leland, NC 28451

Tel: (732) 380-8900

Fax: (910) 769-9435

Email: [customers@mtc-usa.com](mailto:customers@mtc-usa.com)

Website: [www.mtc-usa.com](http://www.mtc-usa.com)