Restek HPLC Columns

Thank you for purchasing an HPLC column from Restek Corporation.
Each column is individually packed and tested to ensure superior performance. The enclosed test sheet contains a chromatogram and other important information specific to your column, including the column serial number and the lot number of the packing material. Please retain this information, as it will prove invaluable in the event that troubleshooting is required.

Column Hardware
All column hardware is 316 stainless steel. All columns packed with 5µm materials have 2µm frits; columns packed with 3µm materials have 0.5µm frits. The end-fittings are compatible with fittings from Valco®, Parker, or Upchurch, but not with fittings from Waters, SSI, Rheodyne®, or Gasukura. To connect the column to any of these fittings, we recommend using our wrenchless, universal 10-32 PEEK™ column connector (cat.# 25015) – it will adjust to any seat, depth, or style, and is reusable. Secure-Fit fittings, available in both PEEK™ and stainless steel, also are an excellent choice for consistent, leak-free seals.

Connecting the Column to the HPLC System
Your column is shipped with PEEK™ end plugs; simply loosen the plugs and remove before installation. The column contains the solvent indicated on the enclosed test sheet. Be sure that your intended mobile phase is compatible with this solvent. If it is not, you must flush the column with an intermediate solvent that is compatible with both the shipping solvent and your intended mobile phase. Please contact our Technical Service chemists if you are not sure about solvent miscibilities. Be especially careful if you will be using a buffer, because the shipping solvent for most columns contains more than 50% organic solvent, and contact with a buffer could cause a precipitate to form and plug the column.

Flow Direction
The arrows on the column label indicate the flow direction. Begin by connecting the inlet end of the column to the injector or autosampler and allow the mobile phase to flow from the outlet end of the column into a beaker for 10-15 minutes, gradually increasing the flow rate to its optimum value (Table I). Then, stop the mobile phase flow and connect the column to your detector.

Because every HPLC system is unique, especially when used in gradient mode, your results might differ from those obtained in our laboratory. A call to our Technical Service chemists will assist you in optimizing your separations. Record the Operating Pressure! Continuous monitoring of system pressure will alert you to changes that might require you to perform maintenance, such as washing the column, replacing a guard column or filter, or cleaning the inlet frit.

Table I Optimum Flow Rate

Column ID	Flow Rate
1.0mm	50µL/min.
2.1mm	200µL/min.
3.2mm	500µL/min.
4.6mm	1.0mL/min.

Column Lifetime
Restek column packings are based on silica particles. The pH limitations of these materials can be found in the most recent Restek catalog, or at www.restek.com Extended use of the column at extremes of pH could shorten the lifetime of the column. We recommend an upper temperature limit of 80°C. Elevated temperatures might improve efficiency, by lowering solvent viscosity but, again, column lifetime may be compromised.

We strongly recommend you use only solvents that have been prepared specifically for HPLC, and that you thoroughly filter and degas all mobile phases before use. Residue and chemical contaminants in non-HPLC grade solvents can alter a column's selectivity and, by plugging the inlet frit, significantly increase system pressure. Increases in column backpressure indicate a plugged inlet frit or other problem.

Lifetime is also governed by the phase type. Hydrocarbon phases, such as C18 phases, are relatively chemically inert. Polar phases, such as the amino phases, require special care as they are chemically reactive. Mobile phases containing an aldehyde or ketone (as acetone) will permanently alter the retention of amino phases. Repeated injections containing a ketone or aldehyde will also eventually permanently alter the phase. The alteration proceeds more quickly at pH 4.5 to pH 5.5, but no pH range is resistant.

Column Clean-up
Column lifetime can be extended considerably through routine column washes and proper storage. Columns should be flushed prior to storage, to remove buffers, acids, or bases. The ideal flushing solvent is a solution identical in composition to the last-used mobile phase, minus any buffer, acid, or base components. Be sure to store information describing the storage solvent with the column.

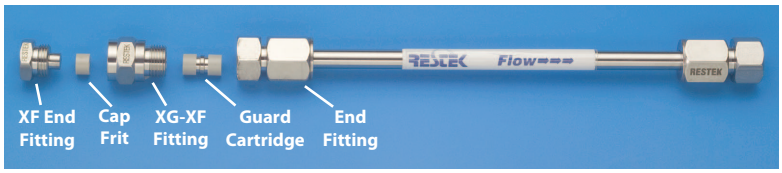
If system pressure begins to rise, backflushing the column might reduce pressure by removing particle buildup from the inlet frit. Backflush the column by disconnecting the column from the injector and detector, then connecting the outlet end of the column to the pump and collecting the solvent exiting the inlet end of the column in a beaker.

Column storage
Store columns with end plugs securely fastened and be sure to include information describing the storage solvent. For short-term storage, all columns should be flushed with a solvent identical in composition to the most recently used mobile phase minus any buffered, acidic, or basic components. For long-term storage, reversed phase columns should be stored with 50% water/50% organic solvent (e.g., acetonitrile or methanol), and normal phase columns should be stored with a nonpolar solvent (e.g., hexane).

Trident Integral HPLC Guard Column System

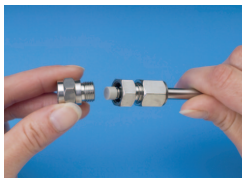
The Trident system's foundation consists of the analytical column configured with our exclusive Trident end fitting and XF end fitting. You can order any Restek HPLC column with this configuration simply by adding a "-700" suffix to the catalog number for the column. The external cap frit in the XF end fitting can be replaced by removing the XF end fitting, pulling off the old frit, and pushing a new frit into place. When replacing the XF end fitting, tighten less than $^{1}/_{8}$ turn past finger-tight—there is no need to overtighten this connection.

For maximum protection against particulate matter and sample contaminants, the system can be configured with both an integral guard cartridge and a replaceable external frit. To assemble this configuration, remove the XF end fitting, insert the appropriate 1cm or 2cm guard cartridge into the Trident end fitting, attach an XG-XF fitting (cat.# 25026 or 25062) to the Trident end fitting, and connect the XF end fitting to the XG-XF fitting. Do not overtighten any of these connections.

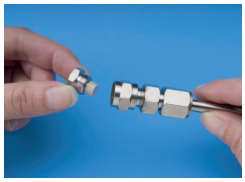


Assembled column with Trident integral guard system. To order, add "-700" to the catalog number of the column, and order guard cartridges and the XG-XF fitting separately.

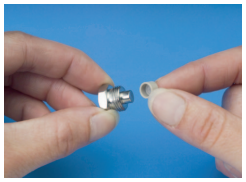
Remove the XF end fitting and install the guard cartridge in the end of the column.



Add the XG-XF fitting



Re-install the XF end fitting with cap frit.



The cap frit can be easily replaced if it becomes contaminated/plugged.

Replacement parts for the Trident guard column system

Part	cat.#
XF End Fitting	25024
XG-XF Fitting for 10mm Guard Cartridge	25026
XG-XF Fitting for 20mm Guard Cartridge	25062
Cap Frits, 4mm/2.0µm porosity	25022
Cap Frits, 4mm/0.5µm porosity	25023
Cap Frits, 2mm/2.0µm porosity	25057

Restek guard column cartridges also can be used with Trident Direct holders:

Part	cat.#
10mm Guard Cartridge Holder with Filter	25084
20mm Guard Cartridge Holder with Filter	25086

Contact Technical Service at 800-356-1688, 814-353-1300, ext. 4, or support@restek.com (or contact your Restek representative) if you have any questions about this product or any other Restek product.

RESTEK
Chromatography Products

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