



CHROMATOGRAPHIC SPECIALTIES INC.

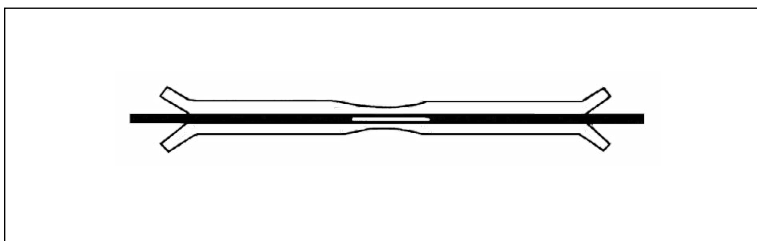
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FUSED SILICA CONNECTIONS — A Technical Note

In gas chromatography, low dead volume, leak-free connections are essential. In this Technical Note, we illustrate options for making capillary column connections using glass or fused silica connectors, stainless steel connectors and new, innovative products which combine the advantages of both.

Make Your Own Connection ... With A Glass Connector

Note: The success, failure and longevity of leak-free column connections are highly dependent on the assembly technique used. The key to success in this technique can be described with one word: *clean*. Clean hands, clean union, clean column surface and clean column cuts.



- Easy to use. Low cost.
- Visually confirm seal integrity.
- Low thermal mass. Low dead volume.
- No loss of system inertness or efficiency.
- “Universal” or specific sizes available.
- Also available in X, Y, angled Y, angled straight through, and tri-split configurations.
- Not recommended above 325°C.
- Not recommended for Al clad or MXT columns.

Installation Instructions

These unions are **fragile** - handle with care.

1. Cut fused silica column squarely using a ceramic wafer or sapphire scribe. Verify clean cut with a magnifier.
2. Clean and lubricate column end by dipping in methanol.
3. Push column end firmly into clean connector. Check for dark ring of polyimide around column end to confirm seal. Column should not pull out of connector easily. At this point in the procedure a small drop of polyimide sealing resin may be applied at the top of the connector seal - on one side only - to provide added mechanical stability. Be careful the polyimide resin does not plug the column end or connector. Allow to air-dry before proceeding to step 4.
4. Leak-check the connection.
5. Maintain gas flow and cure by heating at 250°C for 1 hour. If polyimide sealing resin was used, heat from 40°C to 150°C at 4°C/min., hold 30 min., then program to 220°C at 1°C/min. and hold for 30 min.

Alternate instructions for increased stability.

1. Rinse the inside of the union with acetone, and dry.
2. Lightly score the tubing with the proper cleaving tool. Do not saw the tubing, and do not break off the scored portion yet.
3. With the end of the tubing that will be discarded pointing up, rinse the scored areas with acetone.
4. Apply a very thin layer of polyimide sealing resin over the score by wiping the column with a Kimwipe® that has been spotted with a small amount of polyimide sealing resin.
5. With the open column end pointing upward, remove the small scored end.
6. Check the cut end with a magnifying glass to ensure a clean 90° cut (no burrs or divots). If polyimide resin has seeped into the column, repeat steps 2-6.
7. Place a small amount of polyimide sealing resin only on one side of the column about 1/4” from the column end. When this small amount cures, it will attach the column to the union wall.
8. Insert the column end into the union, and press the two together firmly.
9. Install the column into the inlet and detector, and pressurize to 5-10 psi. Verify flow from the column exit end(s). Examine the assembly to insure that it has not been jarred loose, and heat it for a minimum of 30 minutes at 150°C.
10. Test for leaks.



Polyimide Resin

Securely connects a glass connector to a fused silica column.

Max. Temp.: 350°C

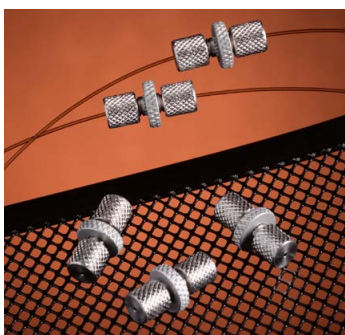
Product Number: RK20445

Storage

After being opened, the polyimide resin can be stored at room temperature for a maximum of 2 weeks with only minimal change in properties. When refrigerated at 5-8°C, this product may be kept for approximately 4-6 months. Polyimide resin is moisture sensitive; always keep the bottle closed when not in use.

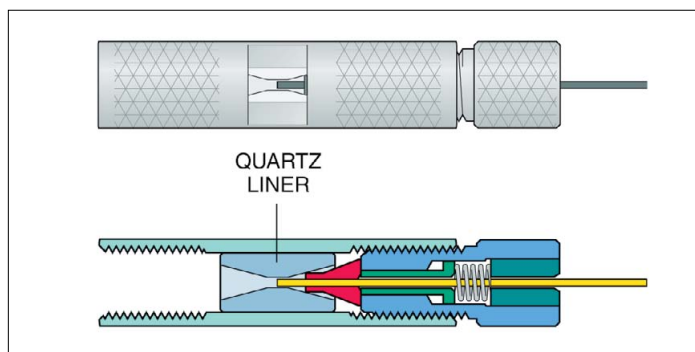
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Make Your Own Connection ... With A Valco Stainless Steel Connector



1/32" Ultra Low Mass External Unions

- Specifically designed for use with capillary columns in GC.
- Low mass and does not require wrenches to seal.
- Use only with one-piece fused silica adapters, since metal ferrules will distort the detail.



Fused Silica Union With Self-Compensating Nut

- Patented design.
- Quartz liner.
- Spring-loaded self-compensating nut.
- Constant sealing force even during temperature programming.
- Works with all types of tubing, metal or fused silica.

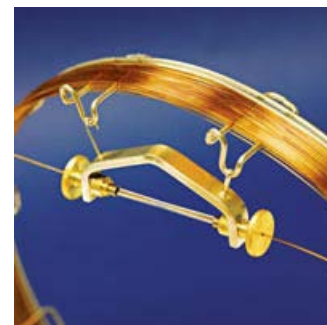
Make Your Own Connection ... With A Restek® Vu2 Union®

Vu2 Union® Connectors

- Connect a guard column to an analytical column.
- Connect a column to a transfer line.
- Connect two columns in series.
- Repair a broken column.
- Fit both Restek® cage designs

How does a Vu2 Union® connector work?

A Press-Tight® union in the Vu2 Union® connector joins the fused silica tubing ends together; the ferrule and knurled nut at each end of the connector hold the tubing in place via a secondary seal between the ferrule and the Press-Tight® union. Each knurled nut applies independent pressure to each ferrule to make leak-tight seals with the column ends. These ultra-strong connections will not unexpectedly disconnect under temperature changes, vibrations, or other stresses normally encountered in GC analyses. The open design allows visual confirmation of the seal between the column and the Press-Tight® union to ensure confidence in the connection. Hang the connector from the column cage to minimize stress on the connections.



Who will benefit from using Vu2 Union® connectors?

Any analyst using guard columns, transfer lines, or restrictor tubing; performing a dual-column analysis with columns connected in series; or seeking to repair a broken column will find Vu2 Union® connectors the simple, reliable, easy-to-use solution to their connection needs.

Kits include: Vu2 Union® body, two knurled nuts, two Press-Tight® unions, and four ferrules.

Note: This product is not recommended for GC column-to-MS connections.

Let Restek® Make the Connection for You ... With Integra-Guard® Columns!

Innovative Integra-Guard® Columns

Get the protection without the connection!

- These innovative columns incorporate both guard column and analytical column in a continuous length of tubing, eliminating the connection and all connection-associated problems!
- The guard column section is marked separately from the analytical column, using high-temperature string.
- A wide variety of our Integra-Guard® capillary columns are available.



Integra-Guard® columns are available for all phases listed for columns with 0.25, 0.32, or 0.53 mm ID. If you don't see what you need here, contact our Technical Support Team.

Rtx®-1, Rtx®-5, Rtx®-5MS, Rxi®5Sil MS, Rtx®-624, Rtx®-1301, Rtx®-1701, Stabilwax®