

# EZ No-Vent® GC/MS Connector Kit

for Thermo DSQ Mass Spectrometers

**Cat.# 22454**

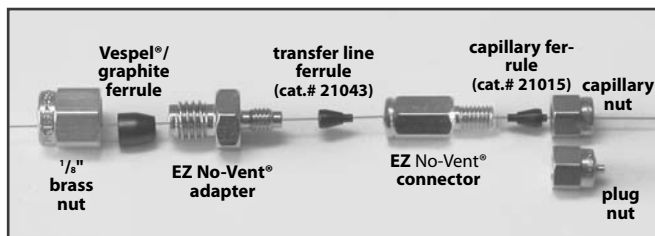
## EZ No-Vent® GC/MS Connector Kit for Thermo DSQ Includes:

EZ No-Vent® connector,  $\frac{1}{16}$ " brass nut, two 0.4mm ID polyimide ferrules for connecting a capillary column, two 0.4mm ID polyimide ferrules for connecting a transfer line, 3 foot x 0.10mm ID deactivated transfer line, EZ No-Vent® plug,  $\frac{1}{8}$ " brass nut,  $\frac{1}{8}$ " Vespel®/graphite ferrule, EZ No-Vent® adapter

## Replacement Components/Tools

### EZ No-Vent® ferrules:

- for connecting adapter:  $\frac{1}{8}$ " Vespel®/graphite (10-pk.) cat.# 20219
- for connecting capillary column: 0.4mm ID (2-pk.) cat.# 21015; 0.5mm ID (2-pk.) cat.# 21016
- for connecting transfer line: 0.4mm ID (2-pk.), cat.# 21043



**EZ No-Vent® deactivated transfer line:** 3 feet x 0.10mm ID, cat.# 21018

**EZ No-Vent® plug:** (5-pk.) cat.# 23112

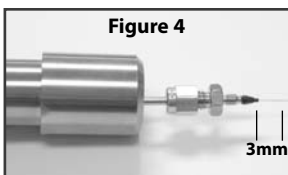
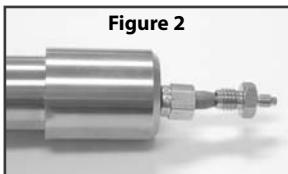
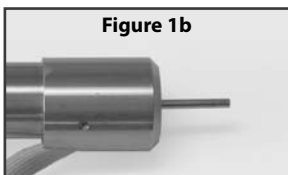
**Capillary column nut:** (20-pk.) cat.# 23100

**Open-end wrench,  $\frac{1}{4}$  - x  $\frac{5}{16}$ -inch:** (2 pk.) cat.# 20110

**Open-end wrench,  $\frac{7}{16}$  - x  $\frac{1}{2}$ -inch:** (2-pk.) cat.# 22455

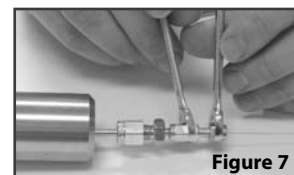
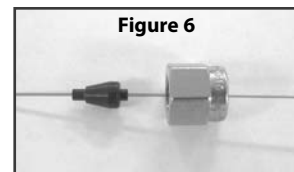
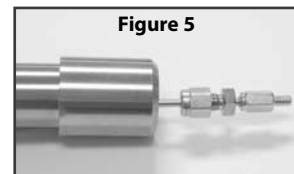
## Installation

1. Prepare the instrument by performing a vent cycle (consult the instrument operation manual).
2. Once the instrument is cooled and vented, remove the column, and any OEM fittings from the MS source (Figure 1b).
  - A. Place the  $\frac{1}{8}$ " brass nut (cat.# 23101),  $\frac{1}{8}$ " Vespel®/graphite ferrule (cat.# 20219), and EZ No-Vent® adapter onto the MS source (Figure 2).
  - B. Thread the brass nut onto the adapter. Tighten finger tight, then tighten an additional  $\frac{1}{4}$ -turn. Use two  $\frac{7}{16}$ " wrenches to tighten the brass nut on the adapter (Figure 3).
3. Using a scoring wafer or similar device to make a clean, square cut, cut a 28cm section of the fused silica transfer line.
4. Install the clean, square end of the 28cm section of the fused silica transfer line into the MS (follow instrument operation manual).
5. Place a polyimide transfer line ferrule (cat.# 21043) (Figure 1a) on the end of the fused silica transfer line that protrudes from the MS (Figure 4).
6. Using a scoring wafer or similar device, make a clean, square cut just before the ferrule, then adjust the fused silica transfer line to extend approximately 3mm from the tip of the ferrule (Figure 4). This ensures



that the fused silica transfer line will bottom out in the EZ No-Vent® connector, and will eliminate dead volume in the connection.

7. Thread the EZ No-Vent® connector onto the EZ No-Vent® adaptor. Tighten finger tight, then tighten an additional  $\frac{1}{4}$ -turn using a  $\frac{7}{16}$ " wrench on the adaptor and a  $\frac{5}{16}$ " wrench on the connector (Figure 5).
8. Place a nut and capillary ferrule (cat.# 21015 or 21016) onto the end of the column (Figure 6).
9. Using a scoring wafer or similar device, make a clean, square cut at the end of the capillary tubing, then adjust the column to extend approximately 3mm from the tip of the ferrule. This ensures that the column will bottom out in the EZ No-Vent® connector, and will eliminate dead volume in the connection.
10. Thread the column nut onto the EZ No-Vent® connector. Tighten finger tight, then tighten an additional  $\frac{1}{4}$ -turn. Use two  $\frac{5}{16}$ " wrenches to tighten the connector and column nut (Figure 7).
11. Start a flow of carrier gas. Use argon or Freon® to check the vacuum side of the system for leaks. If necessary, tighten the EZ No-Vent® connector slightly. Tighten  $\frac{1}{4}$ -turn at a time—overtightening will cause leaks.

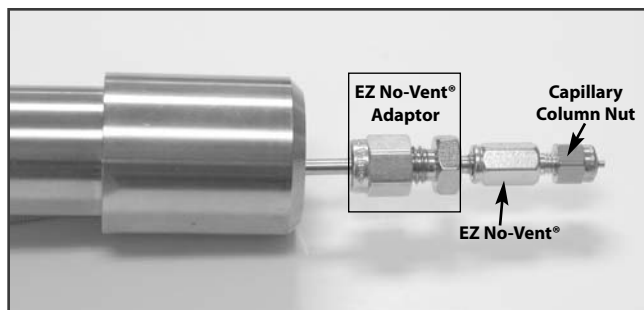


**NOTE: Polyimide ferrules can shrink after one or two thermal cycles. Retighten the fitting and column connection to ensure a leak-free seal. Tighten only  $\frac{1}{4}$  turn at a time; overtightening will cause leaks.**

## Changing Columns

The EZ No-Vent® connector allows column changes without the need to cool or “vent” the MS system. To change columns:

1. Remove the capillary column nut and ferrule from the EZ No-Vent® connector.
2. Install the plug (supplied) onto the column end of the EZ No-Vent® connector and finger tighten.
3. Install the nut and ferrule onto the new column, following the procedure described on the front of this form.
4. Remove the plug from the EZ No-Vent® connector and install the column. Tighten 1/4 turn past finger tight; overtightening will cause leaks. After installing the new column, purge the MS for 30 minutes.



**NOTE: Polyimide ferrules can shrink after one or two thermal cycles. Retighten the fitting and column connection to ensure a leak-free seal. Tighten only 1/4 turn at a time; overtightening will cause leaks.**

## Troubleshooting

Problem	Possible Cause	Suggested Solution
MS will not pump down.	Leak in the system.	Leak -check EZ No-Vent® connector - tighten. Leak -check column connection - tighten.
Prolonged retention times.	Compensation for EZ No-Vent® connector not being programmed.	Leak-check linear velocity with unretained compounds and follow new operating parameters chart (Table I)
Poor peak shapes.	Column/transfer line not properly installed.	Reinstall column or reconnect EZ No-Vent® connector to MS transfer line.
High background.	Air leak	Check EZ No-Vent® connector and column connection; tighten.
Ferrules stick in EZ No-Vent® connector.	Ferrules overtightened.	Tighten only 1/4 turn at a time to obtain a leak-free seal.
Ferrules do not seal/require excessive torque.	Wrong ferrule ID for tubing OD. Wrong ferrule alignment/placement. Wrong nut.	Use correct ferrule. See instructions for correct ferrule placement. Nut must have correct inner chamfer for ferrule. Do not use nuts other than those included with the EZ No-Vent® connector.

## Retention Time (Dead Volume) for Methane

$$\text{Average linear velocity (cm/sec.)} = \frac{\text{column length (cm)}}{\text{dead volume time (sec.)}}$$

Carrier Gas	Column Length/Retention Time in Min.							
	10m	15m	20m	30m	45m	60m	75m	105m
Hydrogen @ 40cm/sec.	0.42	0.63	0.83	1.25	1.88	2.50	3.13	4.38
Helium @ 20cm/sec.	0.83	1.25	1.67	2.50	3.75	5.00	6.25	8.75

## Changes Required When Using the EZ No-Vent® Connector

Changes are required to the manual pneumatics or electronic pressure control (EPC) because the small bore restrictor (0.10mm) inserted into the MS source creates flow characteristics for which the software was not designed to compensate. The higher head pressures used with the EZ No-Vent® connector can change the injection port characteristics. In some cases, higher split vent flows or shorter splitless hold times may be required.

Hardware or software upgrades normally are not needed to obtain excellent results with the EZ No-Vent® connector. If you have questions, please call our technical service team (800-356-1688 or 814-353-1300, ext. 4).

**Call Technical Service at 800-356-1688 or 814-353-1300, ext. 4 (or your local Restek representative)  
if you have any questions about this product or any other Restek product.**



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