EZ No-Vent® GC Column-Mass Spectrometer Connector

for Varian Saturn 2000 Series MSs with 3400, 3600, or 3800 GC

Replacement Components/Tools:

EZ No-Vent® Connector Kit for Varian Saturn 2000 Series: includes EZ No-Vent® fitting, 1/16-inch brass nut, 0.4mm ID ferrules, 100µm deactivated transfer line, 0.4mm ID ferrule for connecting transfer line, and EZ No-Vent® plug cat.# 22423

EZ No-Vent® ferrules for connecting column: 0.4mm ID cat.# 21015; 0.5mm ID cat.# 21016

EZ No-Vent® ferrules for connecting transfer line: 0.4mm ID cat.# 21043

EZ No-Vent® deactivated transfer line: 100µm cat.# 21018

Column nut: (20-pk.) cat.# 23100

EZ No-Vent® plug: (5-pk.) cat.# 23112

Open-end wrench 1/4 x 5/16 -inch: cat.# 20110

See *IMPORTANT!* on the reverse of this instruction sheet.

1. Prepare the instrument by performing a proper vent cycle for the MS (consult instrument operation manual).
2. After the system has cooled, remove the column and the MS transfer line (consult the instrument operation manual).
3. Place the ferrule (provided cat. # 21043) onto the 100µm fused silica transfer line (provided), then cut the end squarely (Fig. 1).
4. Install the 100µm fused silica transfer line into the MS (consult the instrument operation manual).

NOTE: *For best results, cut the 100µm fused silica transfer line to approximately 8 inches. Install the ferrule onto one end of the line. Slide the other end of the line through the MS transfer line and cut approximately 1mm beyond the front of the ferrule (Fig. 1).*

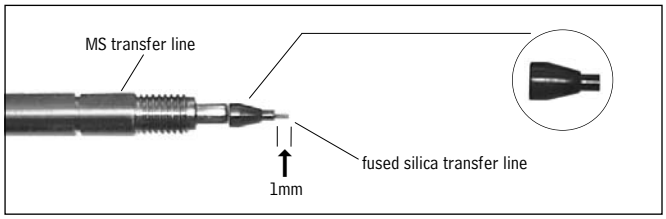
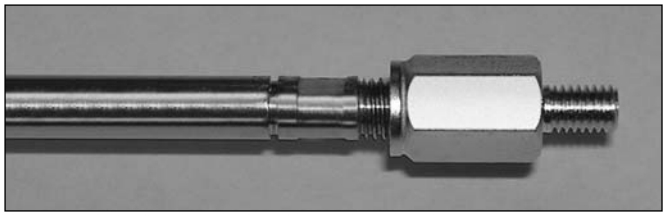


Figure 1

5. Thread the EZ No-Vent® fitting onto the MS transfer line. **Tighten the fitting onto the MS source finger-tight, then tighten until the fused silica transfer line can no longer be moved.**



6. Cut the fused silica transfer line approximately 0.5mm from the tip of the MS transfer line (Fig. 2).

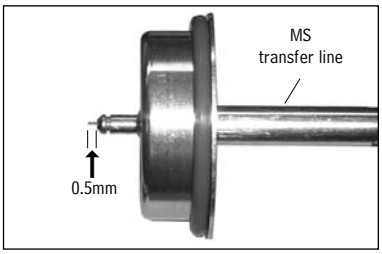


Figure 2

7. Remove the fused silica transfer line and nut from the MS transfer line.
8. Re-install the MS transfer line into the MS (consult instrument operation manual).
9. Re-install the fused silica transfer line and column nut on to the MS transfer line.
10. Install the GC column into the EZ No-Vent® fitting using the ferrule (cat. #21015 or 21016) and nut provided. **Tighten finger-tight, then tighten an additional 1/4-turn.** Use a wrench to hold the MS transfer line in place while tightening the column nut (Fig. 3).

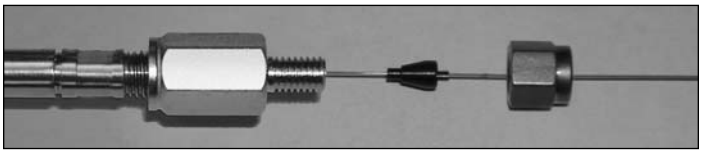


Figure 3

11. Start flow of carrier gas. Use argon to leak-check the system.
12. After initial set-up and air/water leak check, it may be necessary to tighten the EZ No-Vent® fitting slightly. Tighten fitting 1/4-turn at a time. Overtightening will cause leaks.

NOTE: *All polyimide ferrules shrink after thermal cycling. After one or two oven cycles, the fitting and the column nut will need to be re-tightened.*

Restek is committed to being the source of solutions for your analytical problems. Our Innovation Teams focus on addressing customer needs and making the product easy to use. We solicit input from analysts and appreciate your comments and suggestions.

Column Changing

The EZ No-Vent® connector is designed to allow changing the analytical column without the need to cool or "vent" the MS system.

1. Remove the analytical column nut and ferrule from the EZ No-Vent® fitting. *DO NOT loosen the fitting between the EZ No-Vent® fitting and the MS transfer line.*
2. Place the EZ No-Vent® plug into the column end of the EZ No-Vent® fitting and finger-tighten to ensure a leak-tight seal.
3. Install the nut and ferrule onto the new analytical column. Remove the plug from the EZ No-Vent® fitting and install the column. **Tighten ¼-turn past finger-tight (overtightening will cause leaks). Leak-check the connection.**
4. After installation of a new analytical column, purge the MS for 30 minutes.
5. After one or two thermal cycles the polyimide ferrules may shrink. **Re-tighten the fitting and column connection to ensure a leak-tight seal. Leak-check connections.**

Troubleshooting

Problem	Possible cause	Suggested solution
MS will not pump down	Leak in the system	Check EZ No-Vent® fitting—retighten; check column connection—retighten.
Extended retention times	Compensation for EZ No-Vent® not being programmed	Check linear velocity with unretained peak and follow retention time parameters chart.
Poor peak shapes	Column/transfer line not properly installed	Re-install column or re-connect EZ No-Vent® fitting to MS transfer line.
High background	Leak in the system	Check EZ No-Vent® fitting—retighten; check column connection—retighten.
Ferrules stick in EZ No-Vent® fitting	Ferrules over-tightened	Tighten only 1/4-turn at a time to obtain a leak-tight seal.
Ferrules do not seal/ require excessive torque	Incorrect ferrule ID for tubing OD	Use correct ferrule.
	Incorrect ferrule alignment/placement	See Figures 1 and 2 for correct ferrule placement.
	Incorrect nut used for ferrule	Nut must have correct inner chamfer for ferrule, do not use nuts other than those provided with EZ No-Vent® kit.

Retention Time (Dead Volume) for Methane

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

(1 min. = 60 sec.)

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

IMPORTANT!

Changes are required to the manual pneumatics or electronic pressure control (EPC) because inserting the small bore restrictor (0.1mm) into the MS source creates flow characteristics for which the software was not designed to compensate. In order to maintain the same retention times, adjust software inputs for the length of the column and/or adjust head pressure to compensate for the restriction.

Hardware or software upgrades normally are not needed to obtain excellent results with the EZ No-Vent® connector.

The higher headpressures used with the EZ No-Vent® connector might change injection port characteristics. In some cases, higher split vent flows or shorter splitless hold times might be required.

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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ISO 9001:2008 cert.# FM80397
#203-02-018
Rev. date: 12/10

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