

# Genuine Restek Replacement Parts for Agilent GCs



**Chromatography Products**

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# From Injector to Detector

Restek is your #1 source for consumables and supplies for Agilent GC and GC/MS systems!

Restek designs, develops, and markets OEM-equivalent parts and supplies for Agilent systems—even difficult-to-find parts for older models. A team of Restek chemists and engineers is dedicated to creating innovative tools to make your work easier, your system work faster, your analyses more reproducible, and your data more accurate. And, as always, we back our products with friendly, knowledgeable technical service and customer service.

We also offer an extensive selection of capillary, packed, micropacked, and PLOT columns to use in your Agilent system, plus analytical reference materials, vials, syringes, and much more. We also manufacture HPLC columns and accessories. If you don't have a copy of our current catalog, simply call us and ask for one—or request one from our website. Whether you want to order a product, discuss an application or chromatography in general, we look forward to talking with you.



**Donna Lidgett**  
Product Marketing Manager, GC Accessories  
20+ Years of Service

*Donna Lidgett*

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## Restek Performance Coatings

As needs for improved performance of system components increase, coatings often are an effective solution. Restek's Performance Coatings Division specializes in innovative surface treatments for steel, stainless steel, alloys, glass, and other materials. Our surface treatments increase resistance to corrosion, reduce interactions between steel surfaces and active (e.g., sulfur) compounds, inhibit coking on process system surfaces, and offer many other advantages.

Restek's involvement in coatings began in 1987. The focus of our initial work was to produce a coating on stainless steel that would be inert to low levels of reactive organic compounds, such as explosives and volatile organic compounds (VOCs). The end product from this work was the Silcosteel® surface treatment for stainless steel tubing. Silcosteel® treated tubing currently is used for constructing analytical testing equipment by all major manufacturers of gas chromatography sampling and testing instruments.

Since this initial project, our coatings experts have developed a family of surface treatments to address other specific needs, and thereby enhance the performance of system components. Products of our processes are more correctly described as surface treatments, rather than as coatings, because, unlike coatings, the introduced layer permeates and chemically bonds to the treated surface. And unlike coatings, this layer cannot chip, flake, or blister. In brief, these treatments are:

- **Silcosteel®**—A general purpose passivation layer for steel and stainless steel. US Patent 6,511,760.
- **Siltek®**—The ultimate passivation of treated surfaces, from glass to high nickel alloys of steel. US Patent 6,444,326.
- **Silcosteel®-AC**—Dramatically reduces carbon buildup on stainless steel components. US Patent 6,444,326.
- **Silcosteel®-CR**—A corrosion resistant layer that increases the lifetime of system components in acidic environments containing hydrochloric acid, nitric acid, or seawater. US Patent 7,070,833.
- **Silcosteel®-UHV**—Greatly reduces outgassing from components of ultra-high vacuum systems. US Patent 7,070,833.
- **Sulfinert®**—A required treatment for metal components when analyzing for parts-per-billion levels of organo-sulfur compounds. US Patent 6,444,326.

Restek surface treatments are now used in many applications, spanning multiple industries and market areas. Restek coated components increase the lifetime of stack monitoring equipment. Treated injector nozzles have longer service life because coking is inhibited. Sulfinert® treated sampling equipment increases the reliability of process measurements in refineries and petrochemical plants. A mass spectrometer manufacturer demands Silcosteel® treated parts to increase instrument sensitivity for analyzing pesticides. Restek coated air sampling equipment is used in applications as diverse as sampling city air and monitoring submarine cabins.

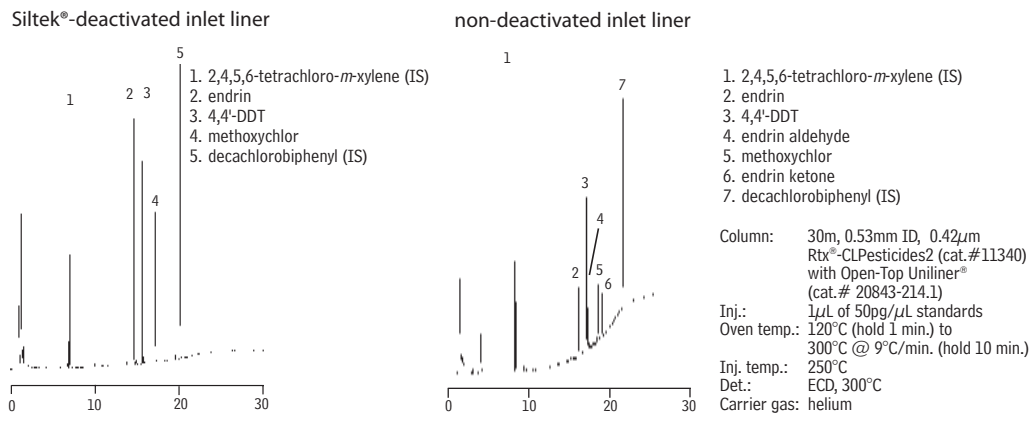
## Siltek® Surface Deactivation

- Eliminate activity by using the most advanced surface treatment available.
- Increase component lifetime—the non-stick surface cleans easily with solvent sonication.
- Ideal for acidic conditions. Siltek® treatment will improve reproducibility and protect hardware.
- Stable to 600°C. A no-bleed deactivation treatment, ideal for all analytical methods.
- Custom service available.

Endrin is more prone to break down on glass surfaces than metal, and DDT is more prone to break down on metal surfaces. Siltek® deactivation of sample-contacting surfaces minimizes endrin and DDT breakdown, to less than 1%!

In addition to our many stock Siltek®-treated products, custom coating service is available. Contact our Technical Service Team at 800-356-1688 or 814-353-1300, ext. 4, or contact your Restek representative.

### A Siltek®-deactivated Uniliner® inlet liner reduces endrin breakdown to less than 1%; DDT and methoxychlor breakdown are undetectable.



## Industries currently benefiting from the reliability of Restek's performance coatings include:

- petroleum, petrochemical, and refineries
- analytical instrument manufacturers
- analytical labs



Silcosteel® is a general purpose passivation for metals.



Silcosteel®-CR treatment improves the corrosion resistance of stainless steel 10X or more.



Siltek® treatment provides the ultimate passivation for many surfaces, from glass to high nickel alloys of steel.



A Sulfinert® layer on metal components is required when analyzing for parts-per-billion levels of organosulfur compounds.

## Leak Detector



Small, compact unit—  
easy to hold and operate.

### Restek Electronic Leak Detector

- Reliable thermal conductivity leak detector.
- Responds to leaks in less than 2 seconds.
- Audible alarm plus LED readout.
- Auto zeros with the touch of a button.
- Built-in rechargeable 9 volt battery.

### Improve GC Performance; Save Your Column!

Avoid poor chromatography caused by leaks—leak check your GC system with the Restek Electronic Leak Detector, the affordable, reliable tool for detecting leaks. Features include internal battery charge capability, a low-battery indicator, a battery charge indicator light, yellow lights to signal a nitrogen leak, a repositioned on/off switch to eliminate accidentally powering on the unit, and a probe tip design that prevents debris from entering the unit. The leak detector's microchip technology enables high sensitivity in a compact unit, the autozero feature allows instantaneous zeroing with the touch of a button, and the ergonomic design puts all controls at your fingertips, for maximum ease of use.

Leaks can cause detector noise and baseline instability, waste carrier gas, and shorten column lifetimes, so leak checks should be a regular part of a GC maintenance program. The Restek Electronic Leak Detector responds in less than 2 seconds to leaks of gases with thermal conductivities different from air, indicating leaks with both an audible alarm and an LED readout. The leak detector detects minute gas leaks that can go undetected by liquid leak detectors. Never use liquid leak detectors on a capillary GC system; liquids drawn into the system through the leaks will contaminate the system.

### How does the Restek Electronic Leak Detector work?

The Restek Electronic Leak Detector detects minute leaks of any gas with a thermal conductivity different from air. The reference gas inlet draws in ambient air for comparison to air drawn into the sample probe. A thermal conductivity difference between the two indicates a leak, and the leak is revealed to the user by both an LED bar graph and an audible tone. The leak detector operates on one rechargeable 9-volt Ni-MH battery (included).

### tech tip

Avoid using liquid leak detectors on a capillary system! Liquids can be drawn into the system.

### Leak Detector Facts

|                    |   |
|--------------------|---|
| Detectable gases:  | helium, nitrogen, argon, carbon dioxide |
| Battery:           | Rechargeable Ni-MH, 9 volt              |
| Operating          |   |
| Temperature Range: | 32°-120°F (0°-48°C)                     |
| Humidity Range:    | 0-97%                                   |
| CE Approved:       | Yes                                     |



Easy-to-clean probe assembly



**Mike Goss**

Instrument Innovations  
Specialist  
7+ years of service!

| Description   | qty. | cat.#     |
|---|------|-----------|
| Leak Detector with 110Volt Battery Charger          | ea.  | 22451     |
| Leak Detector with 220Volt European Battery Charger | ea.  | 22451-EUR |
| Leak Detector with 220Volt UK Battery Charger       | ea.  | 22451-UK  |

Caution: The Restek Electronic Leak Detector is NOT designed for determining leaks of combustible gases. A combustible gas detector should be used for determining combustible gas leaks under any condition. The Restek Electronic Leak Detector may be used for determining trace amounts of hydrogen in a GC environment only.

### Leak Detector Accessory Kit

The kit includes an adaptor fitting to detect leaks in hard-to-reach locations, and a mounting bracket that can be affixed to the wall or GC.



Verify hard-to-reach leaks with the adaptor fitting.



Leak Detector is easily accessed when stored in the mounting bracket.

| Description   | qty. | cat.# |
|---|------|-------|
| Leak Detector Accessory Kit (adaptor fitting for probe, mounting bracket) | kit  | 22453 |

## Liner Deactivations

### Intermediate Polarity (IP) Deactivation

- Phenylmethyl-deactivated surface for better recovery of polar and nonpolar compounds.
- Compatible with most common solvents.
- Our standard deactivation—every Restek liner is IP deactivated unless otherwise requested.

### Siltek® Deactivation

- Revolutionary deactivation for difficult matrices and reactive compounds.
- Inertness retained over a wide sample pH range.
- Minimal bleed.
- Ideal for chlorinated pesticide analysis; lowers endrin breakdown to less than 1%.
- Recommended for use with Rtx®-CLPesticides, Stx™-CLPesticides, Stx™-1HT, and Rtx®-TNT columns.

### Base Deactivation

- Excellent inertness for basic compounds.
- Recommended for use with Rtx®-5 Amine, Rtx®-35 Amine, and Stabilwax®-DB columns.

### Siltek® Deactivation—The Next Generation

- Maximizes the inertness of the sample pathway.
- Minimizes breakdown.
- Low bleed.
- Thermally stable.
- “Clean and green”—manufactured without the use of harmful organic solvents.



All liners are  
**100%**  
deactivated

All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

Our Siltek® deactivation process (US Patent 6,444,326) produces a highly inert glass surface that features high temperature stability, extreme durability, and low bleed. Try Siltek® liners, guard columns, and connectors for better recovery of sample analytes.

**For Siltek® deactivated inlet liners, add the corresponding suffix number to the liner catalog number.**

| qty.   | Siltek® Liner |            | Siltek® Liner with Wool |            | Siltek® Liner with CarboFrit™ |            |
|--------|---------------|------------|-------------------------|------------|-------------------------------|------------|
|        |               | addl. cost |                         | addl. cost |                               | addl. cost |
| each   | -214.1        |            | -213.1                  |            | -216.1                        |            |
| 5-pk.  | -214.5        |            | -213.5                  |            | -216.5                        |            |
| 25-pk. | -214.25       |            | -213.25                 |            | -216.25                       |            |

### Base-Deactivated Inlet Liners

**For base-deactivated inlet liners, add the corresponding suffix number to the liner catalog number.**

| qty.   | Base-Deactivated Liner |            | Base-Deactivated Liner with Base-Deactivated Wool |            | Base Deactivated Liner with CarboFrit™ |            |
|--------|------------------------|------------|---|------------|--|------------|
|        |                        | addl. cost |   | addl. cost |  | addl. cost |
| each   | -210.1                 |            | -211.1  |            | -229.1                                 |            |
| 5-pk.  | -210.5                 |            | -211.5  |            | -229.5                                 |            |
| 25-pk. | -210.25                |            | -211.25   |            | -229.25                                |            |

← Ideal for amines and basic compounds!

## a plus 1 story

“I installed Siltek® liners on one of our GCs to replace standard quartz liners that required deactivating daily. I found the results to be excellent, saving many hours of instrument time with no detrimental effects on the analysis.”

**Matthew Turner**, Laboratory Manager-food contaminants, Global Analysis (UK)

## Liner Packing Materials & Accessories



**Matt Lininger**  
Instrument Innovations  
Engineer  
2+ years of service!

### Why Use Deactivated Wool for a Liner Packing?

- Ensure uniform vaporization in split or splitless liners.
- Prolong column life by trapping septum particles.
- Recommended for autosamplers with fast injection rates.
- Inertness tested for endrin breakdown.



### Deactivated Wool

Further improving our proprietary deactivation process, we make this deactivated wool more inert than our traditional fused silica wool, yet it is as flexible as our traditional borosilicate glass wool.

| Description      | qty.     | cat.# |
|------------------|----------|-------|
| Deactivated Wool | 10 grams | 24324 |

### Base-Deactivated Wool

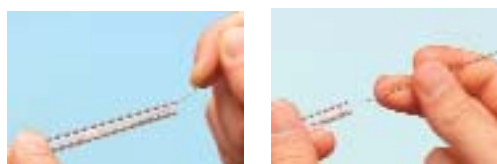
Ideal for amines and other basic compounds.

| Description           | qty.     | cat.# |
|-----------------------|----------|-------|
| Base-Deactivated Wool | 10 grams | 20999 |



### Mini Wool Puller/Inserter

Insert and remove wool plugs easily. Order a spare pack so you'll always have one available.



| Description               | qty.  | cat.# |
|---------------------------|-------|-------|
| Mini Wool Puller/Inserter | 2-pk. | 20114 |

Not recommended for use with double gooseneck liners.



### Inlet Liner Packing Tool

- Easy to use—position wool reproducibly every time.
- Accurate to a specific, measured depth.

Eliminates user variation!



| Description              | qty. | cat.# |
|--------------------------|------|-------|
| Inlet Liner Packing Tool | ea.  | 20339 |

### Prepacked Inlet Liners

Let Restek do the work! Just add the appropriate suffix to the liner catalog number.

| qty.   | Wool    | FS Beads | CarboFrit™† |
|--------|---------|----------|-------------|
| ea.    | -200.1  | -201.1   | -209.1      |
| 5-pk.  | -200.5  | -201.5   | -209.5      |
| 25-pk. | -200.25 | -201.25  | -209.25     |

†CarboFrit™ inserts require a neck greater than 2mm.

### CarboFrit™ Inlet Liner Packing Material

- Highly inert.
- Extends analytical column lifetime.
- Enhances reproducibility of split and splitless injection.
- Uniform pore size and consistent packing density guarantee consistent flow through the liner.
- Easy to install in any liner with an ID >3.5mm when using puller-inserter tool listed below.\*

Add the corresponding suffix number to the liner catalog number.

| Description | suffix  |            |
|-------------|---------|------------|
| each        | -209.1  | addl. cost |
| 5-pk.       | -209.5  | addl. cost |
| 25-pk.      | -209.25 | addl. cost |

\*Liners with IDs less than 3.5mm are difficult to pack. We will pack them on a custom basis (minimum neck ID of 2mm required).



### Replacement CarboFrit™ Inserts

| Description             | qty.   | cat. # |
|-------------------------|--------|--------|
| Frits for liner ID ≤4mm | 10-pk. | 20295  |
| Frits for liner ID >4mm | 10-pk. | 20294  |

### CarboFrit™ Puller/Inserter Tool

- Hook end for removing CarboFrit™ inserts.
- Bent end (90°) for inserting CarboFrit™ inserts.

| Description                     | qty. | cat.# |
|---------------------------------|------|-------|
| CarboFrit™ Puller/Inserter Tool | ea.  | 21642 |



## a plus 1 story

"Restek sent us some carbon material (CarboFrit™ packing) with the suggestion to test it as liner packing. Initially, I didn't even want to try it because carbon is usually highly retentive and catalytically active. As we nevertheless gave it a chance, we were highly surprised...it exhibited low retentive power and good inertness."

excerpt from: *Sample Evaporation in Hot GC Injectors*  
**Dr. Konrad Grob**, *The Restek Advantage*, Winter 1996.

### Deactivated Fused Silica Beads

- Increase sample vaporization surface and minimize splitter discrimination to improve quantitation of compounds having dissimilar boiling points.
- Trap non-volatile or inorganic residue to prevent column inlet contamination.
- Deactivated, heat-treated, and tested to ensure complete inertness.

| Description                    | Mesh  | qty.     | cat.# |
|--------------------------------|-------|----------|-------|
| Deactivated Fused Silica Beads | 60-80 | 25 grams | 20791 |



### Inlet Liner Removal Tool

- Easily remove liner from injector—no more burned fingers.
- Made from high-temperature silicone.
- Won't chip or crack the liner.



No more burned fingers!

| Description              | qty.  | cat.# |
|--------------------------|-------|-------|
| Inlet Liner Removal Tool | 3-pk. | 20181 |


























## tech tip

### Use of Packings with Splitless Liners

We recommend using an injection port liner with wool or CarboFrit™ packing when making splitless injections with an autosampler. If there is no packing material in the liner, the solvent droplets act like water on a hot iron: they bounce around until vaporized (Leidenfrost phenomenon). Because autosamplers make rapid injections, samples can be incompletely vaporized, leading to non-reproducible peak response and tailing. You can prevent this by using wool or CarboFrit™ packing material in the splitless liner, to provide a surface for the solvent droplets to "sit" on until the heat from the injector vaporizes them.

# Inlet Liners

C O L U M N I N S T A L L S T H I S E N D

| Splitless Liners for Agilent GCs   | Benefits/Uses  | ID*/OD & Length (mm)    | Similar to Agilent part #                                    | ea.         | cat.# 5-pk. | 25-pk.       |
|--|--|-------------------------|--|-------------|-------------|--------------|
| <br><b>2mm Splitless</b>                                | trace samples <2µL   | 2.0 ID<br>6.5 OD x 78.5 | 5181-8818 (ea.)<br>5183-4703 (5-pk.)<br>5183-4704 (25-pk.)   | 20712       | 20713       | 20714        |
| <br><b>4mm Splitless</b>                                | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | 210-3003 (ea.)<br>210-3003-5 (5-pk.)                         | 20772       | 20773       | 20774        |
| <br><b>Siltek® 4mm Splitless</b>                        | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | —  | 20772-214.1 | 20773-214.5 | 20774-214.25 |
| <br><b>4mm Splitless w/ Wool</b>                        | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | 19251-60540 (ea.)<br>5183-4691 (5-pk.)<br>5183-4692 (25-pk.) | 22400       | 22401       | 22402        |
| <br><b>2mm Splitless (quartz)</b>                       | trace samples <2µL   | 2.0 ID<br>6.5 OD x 78.5 | 18740-80220 (ea.)<br>5183-4707 (5-pk.)                       | 20914       | 20915       | —            |
| <br><b>4mm Splitless (quartz)</b>                       | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | —  | 20912       | 20913       | —            |
| <br><b>4mm Splitless (quartz) w/ Wool</b>               | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | —  | 22403       | 22404       | —            |
| <br><b>Gooseneck Splitless (2mm)</b>                    | trace samples <2µL   | 2.0 ID<br>6.5 OD x 78.5 | —  | 20795       | 20796       | 20797        |
| <br><b>Siltek® Gooseneck Splitless (2mm)</b>            | trace samples <2µL   | 2.0 ID<br>6.5 OD x 78.5 | —  | 20795-214.1 | 20796-214.5 | 20797-214.25 |
| <br><b>Gooseneck Splitless (4mm)†</b>                   | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | 5181-3316 (ea.)<br>5183-4695 (5-pk.)<br>5183-4696 (25-pk.)   | 20798       | 20799       | 20800        |
| <br><b>Siltek® Gooseneck Splitless (4mm)†</b>           | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | —  | 20798-214.1 | 20799-214.5 | 20800-214.25 |
| <br><b>Gooseneck Splitless (4mm) w/ Wool†</b>           | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | 5062-3587 (ea.)<br>5183-4693 (5-pk.)<br>5183-4694 (25-pk.)   | 22405       | 22406       | 22407        |
| <br><b>Siltek® Gooseneck Splitless (4mm) w/ Wool†</b> | trace samples >2µL   | 4.0 ID<br>6.5 OD x 78.5 | —  | 22405-213.1 | 22406-213.5 | 22407-213.25 |
| <br><b>Double Gooseneck Splitless (4mm)</b>           | trace, active samples >2µL                                 | 4.0 ID<br>6.5 OD x 78.5 | 5181-3315 (ea.)<br>5183-4705 (5-pk.)<br>5183-4706 (25-pk.)   | 20784       | 20785       | 20786        |
| <br><b>Siltek® Double Gooseneck Splitless (4mm)</b>   | trace, active samples >2µL                                 | 4.0 ID<br>6.5 OD x 78.5 | —  | 20784-214.1 | 20785-214.5 | 20786-214.25 |
| <br><b>Cyclo Double Gooseneck (2mm)</b>               | trace, active, dirty samples <2µL                          | 2.0 ID<br>6.5 OD x 78.5 | —  | 20907       | 20908       | —            |
| <br><b>Cyclo Double Gooseneck (4mm)</b>               | trace, active, dirty samples >2µL                          | 4.0 ID<br>6.5 OD x 78.5 | —  | 20895       | 20896       | 20997        |
| <br><b>Siltek® Cyclo Double Gooseneck (4mm)</b>       | trace, active, dirty samples >2µL                          | 4.0 ID<br>6.5 OD x 78.5 | —  | 20895-214.1 | 20896-214.5 | 20997-214.25 |
| <br><b>Recessed Gooseneck (2mm)**</b>                 | base easily packs with wool for dirty samples <2µL         | 2.0 ID<br>6.5 OD x 78.5 | —  | 20980       | 20981       | 20982        |
| <br><b>Recessed Gooseneck (4mm)**</b>                 | base easily packs with wool for dirty samples >2µL         | 4.0 ID<br>6.5 OD x 78.5 | —  | 20983       | 20984       | 20985        |
| <br><b>Siltek® Recessed Gooseneck (4mm)**</b>         | base easily packs with wool for dirty samples >2µL         | 4.0 ID<br>6.5 OD x 78.5 | —  | 20983-214.1 | 20984-214.5 | 20985-214.25 |
| <br><b>Recessed Gooseneck (4mm) w/ Wool**</b>         | base easily packs with wool for dirty samples >2µL         | 4.0 ID<br>6.5 OD x 78.5 | —  | 22408       | 22409       | 22410        |
| <br><b>Recessed Double Gooseneck (4mm)**</b>          | base easily packs with wool for dirty, active samples >2µL | 4.0 ID<br>6.5 OD x 78.5 | —  | 20986       | 20987       | 20988        |



















\*Nominal ID at syringe needle expulsion point.

\*\*Use with two-hole ferrule for dual-column analysis.

†Use this liner for increased sensitivity.

All liners are  
**100%**  
deactivated

All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

| Split Liners for Agilent GCs  | Benefits/Uses   | ID*/OD & Length (mm)      | Similar to Agilent part#                                     | ea.         | cat.# 5-pk.  | 25-pk.       |
|---|---|---------------------------|--|-------------|--------------|--------------|
| <br><b>1mm Split**</b>                               | for purge & trap inlet splitting or sample <1µL         | 1.0 ID<br>6.3 OD x 78.5   | 18740-80200 (ea.)<br>5183-4709 (5-pk.)                       | 20972       | 20973        | —            |
| <br><b>4mm Split w/ Wool</b>                         | universal, use with Agilent 7673 autosampler            | 4.0 ID<br>6.3 OD x 78.5   | 19251-60540 (ea.)<br>5183-4691 (5-pk.)<br>5183-4692 (25-pk.) | 20781       | 20782        | 20783        |
| <br><b>Sitek® 4mm Split w/ Wool</b>                  | universal, use with Agilent 7673 autosampler            | 4.0 ID<br>6.3 OD x 78.5   | —  | 20781-213.1 | 20782-213.5  | 20783-213.25 |
| <br><b>Laminar Cup Splitter</b>                      | high MW compounds                                       | 4.0 ID<br>6.3 OD x 78.5   | —  | 20801       | 20802        | —            |
| <br><b>mini-Lam™ Split</b>                           | high MW compounds                                       | 4.0 ID<br>6.3 OD x 78.5   | —  | 20990       | 20991        | —            |
| <br><b>Cup Splitter</b>                              | high & low MW compounds                                 | 4.0 ID<br>6.3 OD x 78.5   | 18740-80190 (ea.)<br>5183-4699 (5-pk.)                       | 20709       | 20710        | —            |
| <br><b>Sitek® Cup Splitter</b>                       | high & low MW compounds                                 | 4.0 ID<br>6.3 OD x 78.5   | —  | 20709-214.1 | 20710-214.5  | —            |
| <br><b>Cycloplitter®</b>                             | dirty samples, many injections before cleaning required | 4.0 ID<br>6.3 OD x 78.5   | —  | 20706       | 20707        | 20708        |
| <br><b>2mm Split Precision™ Liner w/ Wool</b>        | dirty samples, trace samples                            | 2.0 ID<br>6.3 OD x 78.5   | —  | 20823       | 20824        | —            |
| <br><b>4mm Split Precision™ Liner w/ Wool</b>        | dirty samples, trace samples                            | 4.0 ID<br>6.3 OD x 78.5   | 210-4004-5 (5-pk.)   | 21022       | 21023        | 20979        |
| <br><b>Sitek® 4mm Split Precision™ Liner w/ Wool</b> | dirty samples, trace samples                            | 4.0 ID<br>6.3 OD x 78.5   | —  | 21022-213.1 | 21023-213.5  | 20979-213.25 |
| Split/Splitless Liners for Agilent GCs  | Benefits/Uses   | ID*/OD & Length (mm)      | Similar to Agilent part #                                    | ea.         | cat.# 5-pk.  | 25-pk.       |
| <br><b>Low Pressure Drop Liner w/ Wool</b>         | universal, use with Agilent 6890 GCs                    | 4.0 ID<br>6.3 OD x 78.5   | 5183-4647 (ea.)<br>5183-4701 (5-pk.)                         | 21032       | 21033        | —            |
| <br><b>Low Pressure Drop Liner w/ Wool</b>         | universal, use with Agilent 6850 GCs                    | 4.0 ID<br>6.3 OD x 78.5   | 5183-4711 (ea.)<br>5183-4712 (5-pk.)<br>5183-4713 (25-pk.)   | 20994       | 20995        | 20996        |
| CIS4 and PTV Liners for Agilent GCs   | Benefits/Uses   | ID*/OD & Length (mm)      | Similar to Agilent part#                                     | ea.         | cat.# 10-pk. |              |
| <br><b>Straight Glass</b>                          | general use   | 2.0 ID<br>3.0 OD x 71     | 5183-2036  |             | 21157        |              |
| <br><b>Baffled Glass</b>                           | active compounds, drugs, pesticides                     | 1.5 ID<br>3.0 OD x 71     | 5183-2037  |             | 21704        |              |
| <br><b>Sitek® Baffled Glass</b>                    | active compounds, drugs, pesticides                     | 1.5 ID<br>3.0 OD x 71     | —  |             | 21704-214.10 |              |
| <br><b>Glass w/ Wool</b>                           | large volume injections                                 | 2.0 ID<br>3.0 OD x 71     | 5183-2038  |             | 21156        |              |
| SPME Liners for Agilent GCs   | Benefits/Uses   | ID*/OD & Length (mm)      |  | ea.         | cat.# 5-pk.  |              |
| <br><b>SPME Liner</b>                              | ideal for low-volume SPME applications                  | 0.75 ID<br>6.35 OD x 78.5 |  |             | 21110        | 21111        |

\*Nominal ID at syringe needle expulsion point.

\*\*Use this liner for increased sensitivity.

### tech tip

#### Injector Maintenance









Approximately ninety percent of “bad” chromatography is traceable to problems in the injection port. These problems include contaminated carrier gas, incorrect injector flows, active or dirty sites on inlet seals and liners, improper use of wool, leaks, backflash, discrimination, incorrect injector temperature, poor column installation, and use of the wrong injection technique. To minimize injection port problems, set up a routine maintenance schedule and be sure to investigate the injector first when troubleshooting.

### ordering note







For descriptions of liner deactivations, packings, and tools, see [pages 3-5](#).

## Inlet Liners

COLUMN INSTALLS THIS END

| DI Liners for Agilent GCs<br>(For 0.32/0.53mm ID Columns)   | Benefits/Uses   | ID*/OD &<br>Length (mm) | cat.#<br>ea. | cat.#<br>5-pk. |
|---|---|-------------------------|--------------|----------------|
| <br>1mm Uniliner***†                     | trace, active samples, samples <1µL                             | 1.0 ID<br>6.3 OD x 78.5 | 21052        | 21053          |
| <br>Siltek® 1mm Uniliner***†             | trace, active samples, samples <1µL                             | 1.0 ID<br>6.3 OD x 78.5 | 21052-214.1  | 21053-214.5    |
| <br>Uniliner***                          | trace, active samples, high recovery & linearity                | 4.0 ID<br>6.3 OD x 78.5 | 20335        | 20336          |
| <br>Siltek® Uniliner***                  | trace, active samples, high recovery & linearity                | 4.0 ID<br>6.3 OD x 78.5 | 20335-214.1  | 20336-214.5    |
| <br>Cyclo-Uniliner***                    | trace, dirty, high MW active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | 20337        | 20338          |
| <br>Siltek® Cyclo-Uniliner***            | trace, dirty, high MW active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | 20337-214.1  | 20338-214.5    |
| <br>Open-top Uniliner® w/ Wool**         | trace, dirty, active samples, high recovery & linearity         | 4.0 ID<br>6.3 OD x 78.5 | 20843        | 20844          |
| <br>Siltek® Open-top Uniliner® w/ Wool** | trace, dirty, active samples, high recovery & linearity         | 4.0 ID<br>6.3 OD x 78.5 | 20843-213.1  | 20844-213.5    |

All liners are  
**100% deactivated**  
All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

| DI Liners for Agilent 5890 & 6890 GCs<br>(For 0.25/0.32/0.53mm ID Columns)   | Benefits/Uses***                                 | ID*/OD &<br>Length (mm) | Similar to<br>Agilent part # | ea.         | cat.#<br>5-pk. | 25-pk.       |
|--|--|-------------------------|------------------------------|-------------|----------------|--------------|
| <br>Drilled Uniliner® (hole on top)                       | trace, active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | —                            | 21054       | 21055          | 20998        |
| <br>Siltek® Drilled Uniliner® (hole on top)               | trace, active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | —                            | 21054-214.1 | 21055-214.5    | 20998-214.25 |
| <br>Drilled Uniliner® (hole on bottom)                   | trace, active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | G1544-80730                  | 20756       | 20771          | —            |
| <br>Double Gooseneck Drilled Uniliner® (hole on top)    | trace, active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | —                            | 20508       | 20509          | —            |
| <br>Double Gooseneck Drilled Uniliner® (hole on bottom) | trace, active samples, high recovery & linearity | 4.0 ID<br>6.3 OD x 78.5 | G1544-80700                  | 20954       | 20989          | —            |
| <br>Siltek® 1mm Drilled Uniliner® (hole on top)         | trace, active samples, high recovery & linearity | 1.0 ID<br>6.3 OD x 78.5 | —                            | 21390-214.1 | 21391-214.5    | —            |

\*\*\*Hole in Drilled Uniliner® makes direct injection possible with EPC-equipped 6890 GCs!

\*Nominal ID at syringe needle expulsion point.  
\*\*These Uniliner® liners are for split/splitless injection ports.  
†This liner for use with 0.25, 0.32, or 0.53mm ID columns.

### tech tip

#### Drilled Uniliner®

Use the Drilled Uniliner® with the hole near the bottom for analysis in which compounds of interest could be affected by a tailing solvent peak. Use the Drilled Uniliner® with the hole near the top for aqueous injections, as well as for analysis in which the compounds of interest elute away from the solvent peak.



#### Siltek® Metal Inlet Liners for Agilent GCs

- Won't crack, chip or break like glass liners.
- Inertness equivalent to glass liners.
- Excellent response for pesticides, phenols, and other active compounds.

| Liner Type (5.2mm ID x 6.3mm OD x 78.5mm) | 5-pk. | 25-pk. |
|---|-------|--------|
| Cyclo/Single Gooseneck                    | 20974 | 20975  |
| Single Gooseneck                          | 21702 | 21703  |
| Cycloplitter®                             | 20726 | 20729  |
| Split/Splitless w/Wool                    | 21700 | 21701  |

**Viton® O-Rings for Agilent GCs**

- Fit split (6.3mm OD) or splitless (6.5mm OD) liners.

| Description                    | Max. temp. | Similar to Agilent part # | qty.   | cat.# |
|--------------------------------|------------|---------------------------|--------|-------|
| Viton® O-Rings for Agilent GCs | 250°C      | 5180-4182                 | 25-pk. | 20377 |



**Graphite O-Rings for Agilent and Varian 1177 GCs**

- Excellent thermal stability at injection port temperatures up to 450°C!

| Description                                    | Max. temp. | Similar to Agilent part # | Restek cat.# |        |
|--|------------|---------------------------|--------------|--------|
|  |            |                           | 10-pk.       | 50-pk. |
| 6.35mm ID Graphite O-rings for split liners    | 450°C      | 5180-4168                 | 20296        | 20297  |
| 6.5mm ID Graphite O-rings for splitless liners | 450°C      | 5180-4173                 | 20298        | 20299  |



**Liner Seals for CIS4 and PTV**

| Description                  | Max. temp. | Similar to Agilent part # | Similar to Gerstel part # | qty.  | cat.# |
|------------------------------|------------|---------------------------|---------------------------|-------|-------|
| Liner Seals for CIS4 and PTV | 450°C      | 5182-9749                 | 007541-005-00             | 5-pk. | 22684 |



**HANDY septum size chart**

| Agilent Instrument           | Septum Diameter (mm) |
|------------------------------|----------------------|
| 5880A, 5890, 6890, 6850, PTV | 11                   |
| 5700, 5880                   | 9.5/10               |
| On-Column Injection          | 5                    |

**Thermolite® Septa for Agilent GCs**

- Usable to 340°C inlet temperature; precision molded for consistent fit.

| Septum Diameter | 25-pk. | 50-pk. | 100-pk. |
|-----------------|--------|--------|---------|
| 5mm (3/16")     | 27120  | 27121  | 27122   |
| 9.5mm (3/8")    | 27135  | 27136  | 27137   |
| 10mm            | 27138  | 27139  | 27140   |
| 11mm (7/16")    | 27141  | 27142  | 27143   |



**IceBlue™ Septa for Agilent GCs**

- Usable to 250°C inlet temperature; precision molded for consistent fit.

| Septum Diameter | 50-pk. | 100-pk. |
|-----------------|--------|---------|
| 9.5mm (3/8")    | 27158  | 27159   |
| 10mm            | 27160  | 27161   |
| 11mm (7/16")    | 27162  | 27163   |



**BTO® Septa for Agilent GCs**

- Usable to 400°C inlet temperature; precision molded for consistent fit.

| Septum Diameter           | 50-pk. | 100-pk. |
|---------------------------|--------|---------|
| 5mm CenterGuide™          | 27100  | 27101   |
| 9.5mm (3/8")              | 27106  | 27107   |
| 10mm                      | 27108  | 27109   |
| 11mm (7/16") CenterGuide™ | 27110  | 27111   |



**Septum Puller**

- Keep several on hand in your laboratory—can be used in many different ways.
- Use hooked end for removing septa and O-rings; pointed end works well for removing stuck ferrules or fragments.



| Description   | qty. | cat.# |
|---------------|------|-------|
| Septum Puller | ea.  | 20117 |



## Septum Nuts, Injection Port Tools



### Knurled Septum Nuts for Agilent 5890/6890/6850 GC Split/Splitless Injectors

- Tighten easily without the use of a wrench.
- Ensure a leak-tight injection port, increase septum lifetime, and decrease maintenance requirements.
- Thread design and needle guide allow easy penetration and prevent premature septum coring.
- High-quality stainless steel construction.

| Description   | qty. | cat.# |
|---|------|-------|
| Knurled Septum Nut, Autosampler (for 23-gauge needles)      | ea.  | 21479 |
| Knurled Septum Nut, Manual Injection (for 26-gauge needles) | ea.  | 21478 |



### Septum Nuts for use with Agilent 5890/6890/6850 Split/Splitless Injectors

- Ensure a leak-tight injection port, increase septum lifetime, and decrease maintenance requirements.
- Thread design and needle guide allow easy penetration and prevent premature septum coring.
- Manual injection septum nut allows use of 26-gauge needles for on-column injections.
- Made of high-quality stainless steel.

### tech tip

Always use the Manual Injection Septum Nut (for 26-gauge needles) for on-column injections.

| Description   | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| Autosampler & PTV Septum Nut (for 23-gauge needles) | 18740-60835               | ea.  | 20631 |
| Manual Injection Septum Nut (for 26-gauge needles)  | 18740-60835               | ea.  | 21309 |



### Septum Nut Removal Tool for Agilent 5890/6890/6850 GCs

- Easily remove the septum nut without touching the heated nut—no more burned fingers!
- Unique, ergonomic handle—easy to grip.

| Description  | qty. | cat.# |
|--|------|-------|
| Septum Nut Removal Tool for Agilent 5890/6890/6850 GCs | ea.  | 24918 |



### Injector Wrench for Agilent 5890/6890/6850 GCs

- Use to remove the septum nut and weldments during GC maintenance.
- High-quality stainless steel construction.
- Meets original equipment performance.

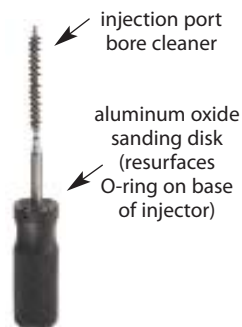


Use the smaller end to remove the septum nut.



Use the larger end to tighten the split/splitless weldment nut.

| Description                                    | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Injector Wrench for Agilent 5890/6890/6850 GCs | 19251-00100               | ea.  | 22065 |



injection port bore cleaner

aluminum oxide sanding disk (resurfaces O-ring on base of injector)

### Injection Port Repair Tool for Agilent Split/Splitless Injection Ports

- Remove contaminants, achieve a better seal.
- Resurface critical inlet seal areas.



| Description  | qty.   | cat.# |
|--|--------|-------|
| Injection Port Repair Tool for Agilent Split/Splitless Injection Ports | ea.    | 21393 |
| Replacement Sanding Disks (5 fine & 5 medium)                          | 10-pk. | 22689 |
| Replacement Bore Brushes (one 6.5mm & one 7mm)                         | 2-pk.  | 21353 |



Make your injection port threads like new!

### Rethreading Tool

- Repair worn or damaged threads in injection ports, fittings, etc.
- Built-in guide to prevent cross-threading.



- 1) Worn & damaged threads can allow oxygen into the system—compromising analytical results and destroying columns.
- 2) Screw the tool completely onto the injection port in a clockwise direction. Unscrew the tool and inspect the threads, repeat as necessary. When done, wipe threads with methanol to remove any debris.

| Description  | qty. | cat.# |
|--|------|-------|
| Rethreading Tool for 1/4" compression fittings (Agilent split/splitless injection ports) | ea.  | 23018 |

## Capillary Column Nuts, Installation Gauge

### Capillary Column Nuts for Agilent 5890/6890 GCs

Available in brass or stainless steel.



for use with "compact" Agilent-style ferrules



for use with standard ferrules

| Description   | Similar to Agilent part # | qty.  | cat.# |
|---|---------------------------|-------|-------|
| <b>For use with "compact" Agilent-style ferrules.</b> |                           |       |       |
| Stainless Steel Capillary Column Nut                  | 5181-8830                 | 2-pk. | 21884 |
| Brass Capillary Column Nut                            | 5181-8830                 | 2-pk. | 21878 |
| <b>For use with standard 1/16"-type ferrules.*</b>    |                           |       |       |
| Stainless Steel Capillary Column Nut                  | 05921-21170               | 2-pk. | 20883 |
| Brass Capillary Column Nut                            | 05921-21170               | 2-pk. | 21879 |

\*Designed to fit a wider variety of 1/16" ferrules

### Capillary Column Nuts for Agilent 6850 GCs

- Meet or exceed original equipment performance.
- High-quality stainless steel.



| Description                                | Similar to Agilent part # | qty.  | cat.# |
|--|---------------------------|-------|-------|
| Capillary Column Nuts for Agilent 6850 GCs | 5183-4732                 | 2-pk. | 21882 |

### Finger-Tight Capillary Column Nut

- Rapidly tighten without wrenches; avoid stripped threads.
- Either version can be used with 0.25, 0.32, or 0.53mm ID columns.



| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| <b>For use with "compact" Agilent-style ferrules.*</b> |                           |      |       |
| Finger-Tight Capillary Column Nut                      | 5020-8293                 | ea.  | 21311 |
| Finger-Tight Capillary Column Nut                      | 5020-8292                 | ea.  | 21312 |
| <b>For use with standard ferrules.</b>                 |                           |      |       |
| Finger-Tight Capillary Column Nut                      | 5020-8293                 | ea.  | 21312 |

\*Similar to Agilent part # 5020-8293 and 5020-8292, except that the Restek nut can be used with Vespel® ferrules.

also **available**

#### Ferrules

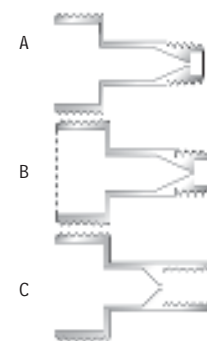
See [pages 31-32](#) for our listing of ferrules.

### Finger-Tight Capillary Column Nuts

- Allow wrench-free column installations.
- Work with standard or compact (Agilent-style) ferrules.
- Made from high-quality stainless steel.



| Description   | qty.  | cat.# |
|---|-------|-------|
| <b>For use with "compact" Agilent-style ferrules.</b>   |       |       |
| A) Finger-Tight Capillary Column Nuts                   | 2-pk. | 21040 |
| <b>For use with standard 1/16"-type ferrules.</b>       |       |       |
| B) Finger-Tight Capillary Column Nuts                   | 2-pk. | 21041 |
| <b>For use with standard 1/16" compression fittings</b> |       |       |
| C) Finger-Tight Capillary Column Nuts                   | 2-pk. | 21042 |



### Capillary Installation Gauge

- Seats graphite\* ferrules onto column for consistent installations.
- Prevents crushed column ends.
- Made from high-quality stainless steel.



A  
B



Thread . . .



. . . tighten. . .



. . . done.

Easily seat ferrules for consistent installations!

| Description   | qty. | cat.# |
|---|------|-------|
| A) Capillary Installation Gauge for Agilent-style fittings (compact ferrules) | ea.  | 21034 |
| B) Capillary Installation Gauge for 1/16" fittings (1/16" ferrules)           | ea.  | 21399 |

\*Recommended for use with graphite ferrules.



Vespel® ring seal on top and bottom surfaces!

A Dual Vespel® Ring Inlet Seal eliminates the need for a washer!



**Dual Vespel® Ring Inlet Seals**

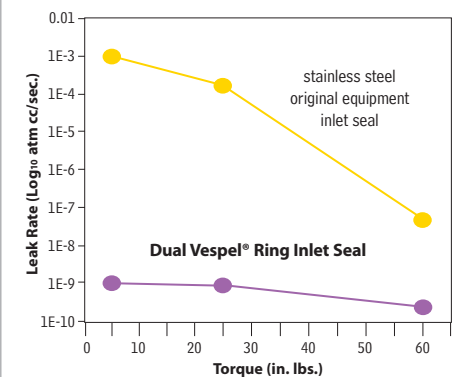
- Vespel® ring embedded in bottom surface eliminates need for washer.
- Vespel® ring embedded in top surface reduces operator variability by requiring minimal torque to seal.
- Prevents oxygen from permeating into the carrier gas, increasing column lifetime.

In Agilent split/splitless injection ports, it can be difficult to make and maintain a good seal with a conventional metal inlet disk. The metal-to-metal seal dictates that you apply considerable torque to the reducing nut, and, based on our testing, this does not ensure a leak-tight seal. Over the course of oven temperature cycling, metal seals are prone to leaks, which ultimately can degrade the capillary column and cause other analytical difficulties.

Our Dual Vespel® Ring Inlet Seal greatly improves injection port performance—it stays sealed, even after repeated temperature cycles, without retightening the reducing nut! This seal features two soft Vespel® rings, one embedded in its top surface and the other embedded in its bottom surface. These rings eliminate the need for a washer, and ensure very little torque is needed to make a leak-tight seal. The rings will not harm the critical seal in the injector body, or any other surface, and are outside the sample flow path. Tests using a high sensitivity helium leak detector show Dual Vespel® Ring Inlet Seals will seal equally effectively at torques from 5 in. lb. to 60 in. lb. (Figure 1).

Why trust a metal-to-metal seal when you can make leak-tight seals quickly and easily—and more reliably—without a washer, with a Restek Dual Vespel® Ring Inlet Seal. Use a stainless steel seal for analyses of unreactive compounds. To reduce breakdown and adsorption of active compounds, use a gold-plated or Siltek®-treated seal. The gold surface offers better inertness than untreated stainless steel; Siltek® treatment provides inertness similar to that of a fused silica capillary column.

**Figure 1** The Dual Vespel® Ring Inlet Seal achieves leak-tight seals even at low torque, reducing the chance of leak-related problems.



Dual Vespel® Ring Inlet Seals are available in gold plating, stainless steel, and Siltek® treated.



Patent pending.

| 0.8mm ID Dual Vespel® Ring Inlet Seal | 2-pk. | 10-pk. |
|---------------------------------------|-------|--------|
| Gold-Plated                           | 21240 | 21241  |
| Siltek® Treated                       | 21242 | 21243  |
| Stainless Steel                       | 21238 | 21239  |
| 1.2mm ID Dual Vespel® Ring Inlet Seal | 2-pk. | 10-pk. |
| Gold-Plated                           | 21246 | 21247  |
| Siltek® Treated                       | 21248 | 21249  |
| Stainless Steel                       | 21244 | 21245  |

**Replacement Inlet Seals with Washers**

- Special grade of stainless steel that is softer and deforms more easily, creating a better seal.
- Increases column lifetime because oxygen cannot permeate into the carrier gas.
- Reduced noise benefits high-sensitivity detectors (e.g., ECDs, MSDs).
- Siltek® treatment provides inertness similar to fused silica.
- All seals include washers.

**Replacement Inlet Seals for Agilent 5890/6890/6850 Split/Splitless Injection Ports**

The inlet seal at the base of the Agilent 5890/6890 GC injection port contacts the sample and must be changed frequently to prevent adsorption of active compounds. In addition, septum fragments and sample residue accumulate on the disk surface, requiring disk replacement.

The Restek inlet seal design increases column lifetime because oxygen cannot permeate into the carrier gas. Detector noise also is reduced with high-sensitivity detectors (e.g., ECDs or MSDs). To reduce breakdown and adsorption of active compounds, use Siltek® or gold-plated seals.



Note: The 1.2mm inlet seal is recommended for use with VespeI®/graphite ferrules or when installing two columns using a two-hole ferrule.

| Single-Column Installation,<br>0.8mm Opening* |        | 0.25/0.32mm ID Dual-Column Installation,<br>1.2mm Opening |        | 0.53mm ID Dual-Column Installation<br>( <sup>1</sup> / <sub>16</sub> -inch opening) |        |
|---|--------|---|--------|---|--------|
| 2-pk.   | 10-pk. | 2-pk.   | 10-pk. | 2-pk.   | 10-pk. |
| <b>Stainless Steel Inlet Seal</b>             |        |   |        |   |        |
| 21315   | 21316  | 20390   | 20391  | 20392   | 20393  |
| <b>Gold-Plated Inlet Seal</b>                 |        |   |        |   |        |
| 21317   | 21318  | 21305   | 21306  | —   | —      |
| <b>Siltek® Treated Inlet Seal</b>             |        |   |        |   |        |
| 21319   | 21320  | 21307   | 21308  | —   | —      |

\*0.8mm ID stainless steel inlet seal is similar to Agilent part #18740-20880,  
0.8mm ID gold-plated inlet seal is similar to Agilent part #18740-20885.

All seals include washers.

**Replacement Inlet Seal Washers**

| Description                    | Similar to Agilent part # | qty.   | cat.# |
|--------------------------------|---------------------------|--------|-------|
| Replacement Inlet Seal Washers | 5061-5869                 | 15-pk. | 21710 |



**Replacement Inlet Cross-Disk Seal for Agilent GCs**

- Ideal for high-flow split applications on Agilent 5890 GCs.
- All seals include washers.

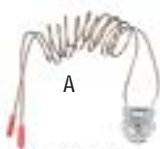
| 0.8mm ID Cross-Disk Inlet Seal for Agilent GCs | Similar to Agilent |       |        |
|--|--------------------|-------|--------|
|  | part #             | 2-pk. | 10-pk. |
| Gold-Plated                                    | 5182-9652          | 20477 | 20476  |
| Siltek® Treated                                | —                  | 20475 | 20474  |
| 1.2mm ID Cross-Disk Inlet Seal for Agilent GCs | Similar to Agilent |       |        |
|  | part #             | 2-pk. | 10-pk. |
| Gold-Plated                                    | —                  | 21009 | 21010  |
| Siltek® Treated                                | —                  | 21011 | 21012  |



**Silver PTV Seals for Agilent 6890 GCs**

| Description                           | Similar to Agilent part # | qty.  | cat.# |
|---------------------------------------|---------------------------|-------|-------|
| Silver PTV Seals for Agilent 6890 GCs | 5182-9763                 | 5-pk. | 21409 |





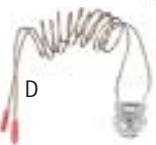
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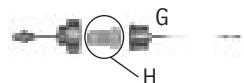
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D



E



I



## Direct Replacement and Siltek® Treated Split/Splitless Injection Ports for Agilent GCs

Would you like better performance from your injector? Our Siltek® treated split/splitless injector is a direct replacement for Agilent 5890 and 6890/6850 GCs, but Siltek® treatment passivates the metal surface to ensure an inert pathway for the sample, delivering increased performance. The injector is manufactured from high-quality stainless steel and meets or exceeds Agilent original equipment performance.

### Direct Replacement and Siltek® Treated Split/Splitless Injection Port for Agilent 5890 GCs

| Description                       | Similar to     |        |       |
|-----------------------------------|----------------|--------|-------|
|                                   | Agilent part # | qty.   | cat.# |
| A) Replacement Weldment*          | 19251-60575    | ea.    | 20265 |
| Siltek® Weldment**                | 19251-60575    | ea.    | 20267 |
| B) Replacement Shell Weldment     | 19251-80570    | ea.    | 20266 |
| Siltek® Shell Weldment**          | 19251-80570    | ea.    | 20268 |
| O-rings for Agilent Trap Fittings | 5180-4181      | 25-pk. | 22064 |

### Direct Replacement and Siltek® Treated Split/Splitless Injection Port for Agilent 6890/6850 GCs

| Description  | Similar to     |      |       |
|--|----------------|------|-------|
|  | Agilent part # | qty. | cat.# |
| C) Replacement Weldment with EPC   | G1544-60575    | ea.  | 22674 |
| Siltek® Weldment with EPC**  | G1544-60575    | ea.  | 22672 |
| D) Replacement Weldment*   | 19251-60575    | ea.  | 20265 |
| Siltek® Weldment**   | 19251-60575    | ea.  | 20267 |
| E) Replacement Shell Weldment  | G1544-80570    | ea.  | 22673 |
| Siltek® Shell Weldment**   | G1544-80570    | ea.  | 22671 |
| F) Optional Split/Splitless Weldment<br>(for use with large canister type filter)        | G1544-60585    | ea.  | 22686 |
| Siltek® Optional Split/Splitless Weldment**<br>(for use with large canister type filter) | G1544-60585    | ea.  | 22670 |

\*For use with manual flow or EPC on Agilent 5890 GCs. For use with manual flow only on Agilent 6890/6850 GCs.

\*\*Treated with Restek's exclusive Siltek® treatment for increased inertness.

## Replacement Chemical Traps for Agilent GCs

- Easy to install.
- Attach to same fittings as original equipment.
- Built-in frits retain fine particles; adsorbents remove both moisture and hydrocarbons.

| Description   | Similar to     |      |       |
|---|----------------|------|-------|
|   | Agilent part # | qty. | cat.# |
| G) Optional Split Vent Trap Assembly<br>for Agilent 6890/6850 GCs | G1544-60610    | kit  | 23031 |
| H) Replacement Traps (2) and O-rings (4)                          | G1544-80530    | kit  | 23032 |

## Injection Port Weldments for Agilent GCs for use with Purge and Trap Systems

Easily attach your purge and trap with pre-installed low dead volume fittings.

### For Agilent GCs with Tekmar Purge and Trap Systems

| Description   | qty. | cat.# |
|---|------|-------|
| I) Weldment for Agilent 6890 GCs                            | ea.  | 22664 |
| Weldment for Agilent 6890 GCs with optional canister filter | ea.  | 22668 |
| Weldment for Agilent 5890 GCs                               | ea.  | 22666 |

### For Agilent GCs with OI Purge and Trap Systems

| Description   | qty. | cat.# |
|---|------|-------|
| J) Weldment for Agilent 6890 GCs                            | ea.  | 22665 |
| Weldment for Agilent 6890 GCs with optional canister filter | ea.  | 22669 |
| Weldment for Agilent 5890 GCs                               | ea.  | 22667 |

## tech tip

### Installing a New Weldment

To eliminate possible leaks and damage to the weldment, always replace the split vent line, nut, and ferrule when installing a new shell weldment.

**EPC Test Kit for Agilent 6890 GCs**

- Kit includes 3 O-rings, 2 plugs, 1 mounting screw and 1 test block.

| Description                       | Similar to Agilent part # | qty. | cat.# |
|-----------------------------------|---------------------------|------|-------|
| EPC Test Kit for Agilent 6890 GCs | G1530-60960*              | kit  | 24323 |

\*Similar to, but not exact equivalent. Kits differ in parts.



**Heater Cartridge & PRT Sensor for Agilent 5890 GCs**

- Use with 5890 FID and split/splitless weldments.
- Meets or exceeds OEM performance.

| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| A + B) Injector/FID Heater + Injector/FID PRT Sensor | 05890-61140               | ea.  | 22068 |
| A) Injector/FID Heater                               | 19231-60620               | ea.  | 22069 |
| B) Injector/FID PRT Sensor                           | 19231-60660               | ea.  | 23035 |



**Heat Sink for Agilent 5890 GC Split/Splitless Injector**

- Meets or exceeds OEM performance.

| Description                    | Similar to Agilent part # | qty. | cat.# |
|--------------------------------|---------------------------|------|-------|
| Heat Sink for Agilent 5890 GCs | 18740-20940               | ea.  | 20409 |



**Heater Block Retaining Nuts for Agilent GC Split/Splitless Injectors**

- Aluminum construction.
- Meet or exceed OEM performance.

| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Heater Block Retaining Nut for Agilent 5890 GCs      | 19251-20620               | ea.  | 22080 |
| Heater Block Retaining Nut for Agilent 6890/6850 GCs | G1544-20590               | ea.  | 23042 |



**Oven Temp Sensor Assembly**

| Description                             | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| A) Oven Temp Sensor for Agilent 5890 GC | 05890-61030               | ea.  | 23040 |
| B) Oven Temp Sensor for Agilent 6890 GC | G1530-61030               | ea.  | 23039 |



**60psig Backpressure Regulator Kit**

Increase the versatility of your Agilent 5890/6890 GC by replacing the existing 30psig backpressure regulator and gauge with our 60psig regulator. Enables you to use longer 60m and 105m columns as well as shorter 10-meter columns. Includes complete instructions.

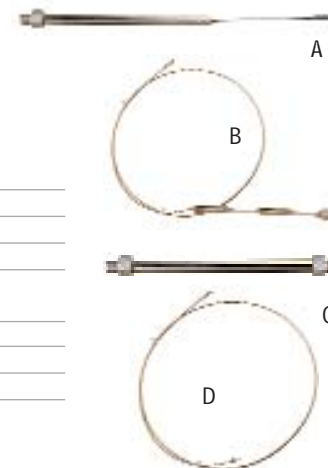
| Description                | Similar to Agilent part # | qty. | cat.# |
|----------------------------|---------------------------|------|-------|
| Backpressure Regulator Kit | 19246-60630               | kit  | 20634 |



**Replacement Chemical Traps for Agilent GCs**

- Easy to install.
- Attach to same fittings as original equipment.
- Built-in frits retain fine particles; adsorbents remove both moisture and hydrocarbons.

| Description   | Similar to Agilent part #  | qty.   | cat.# |
|---|----------------------------|--------|-------|
| A) Replacement Chemical Trap for Agilent 6890/6850 GCs                                | G1544-80550                | ea.    | 22820 |
| B) Replacement Chemical Trap for Agilent 5890 GCs                                     | 05890-61260                | ea.    | 21610 |
| C) Replacement Chemical Trap for Agilent 5880 GCs                                     | 19362-60500                | ea.    | 21158 |
| D) Split Vent Line for Agilent GCs (32-inch)<br>(Includes all installation hardware.) | 19251-80525<br>G1544-20620 | 2-pk.  | 22800 |
| E) O-rings for Agilent Trap Fittings  | 5180-4181                  | 25-pk. | 22064 |
| F) Optional Split Vent Trap Assembly for Agilent 6890/6850 GCs                        | G1544-60610                | kit    | 23031 |
| G) Replacement Traps (2) and O-rings (4)  | G1544-80530                | kit    | 23032 |





### Dual-Column *mini-Lam*™ Direct Injection Tee

(for 1/4-inch packed column inlets)

The inverted cup design offers complete sample vaporization and permits larger sample volumes. It incorporates a Press-Tight® taper in each outlet leg, to make a perfect, dead-volume-free connection to each analytical column (ODs ranging from 0.4 to 0.8mm). Allows visual confirmation of the column connection. The open-top design makes it easy to pack with glass wool, keeping sample residue from contaminating the cup.

| Description   | qty. | cat.# |
|---|------|-------|
| <i>mini-Lam</i> ™ DI Tee Kit (Includes all fittings and ferrules) | kit  | 20436 |
| Replacement 4mm <i>mini-Lam</i> ™ DI Tee                          | ea.  | 20435 |

### Low-Volume Injector for Agilent Split/Splitless Injectors

- Attaches to the GC inlet without cutting existing injection port lines.
- Allows injections from a syringe onto the column for purge & trap troubleshooting or calibration.
- Siltek® treatment eliminates adsorption of active compounds.

Our low-volume injector can be installed in a matter of minutes. Remove the septum nut or splitless weldment and insert the Restek low-volume injector through the split injector. Tighten the base nut and you're ready! Includes a 1/16-inch nut, a 1/16-inch ferrule, a base nut and 1/4-inch Vespel®/graphite ferrule, a 1/16-inch capillary nut, a 5-pack of low-bleed plug septa, and a low-mass septum nut. Order appropriate capillary ferrules separately.



| Description   | qty. | cat.# |
|---|------|-------|
| Low-Volume Injector for Agilent Split/Splitless Injectors | kit  | 21692 |

### Siltek® Septum Packed Purge Port Weldment for Agilent 5890 GCs

Siltek® treatment eliminates adsorption of sensitive compounds (e.g., DDT and endrin). Order Viton® O-rings (below) and appropriate septa (page 9) separately.



| Description  | Similar to Agilent part # | qty.   | cat.# |
|--|---------------------------|--------|-------|
| Siltek® Septum Packed Purge Port Weldment for Agilent 5890 GCs | 19243-80570               | ea.    | 21691 |
| Viton® Replacement O-rings                                     | 5080-8898                 | 10-pk. | 21685 |

## tech tip

### Minimizing Injector Discrimination

When an injected sample is not completely vaporized, lower percentages of compounds that are less volatile (i.e., compounds with high boiling points or high molecular weights) are transferred into the analytical column. As a result, these later-eluting compounds will have progressively decreased peak areas. You can minimize injector discrimination by reducing injector flows, increasing the injector temperature, using pressure pulse injection or a fast autosampler, or using an injector liner that aids in vaporization (e.g., a laminar cup splitter or a liner packed with wool).

## Direct Injection (DI) Inserts and Liner Adaptor for 1/4-Inch Packed Column Injection Ports (for 0.25, 0.32, & 0.53mm ID columns)

### DI Glass Inserts for Agilent 5890 Packed Column GC

- Tolerances closely controlled.
- Can be removed from the septum nut weldment.



| Description  | Similar to<br>Agilent part # | qty.  | cat.# |
|--|------------------------------|-------|-------|
| DI Glass Inserts for Agilent 5890 Packed Column GC<br>(1.7mm ID x 3.0mm OD x 93mm) | 5181-3382<br>5080-8732       | 5-pk. | 20967 |

All liners are  
**100%**  
deactivated

All liners are shipped  
intermediate polarity (IP)  
deactivated unless otherwise  
requested.

**SILTEK**<sup>®</sup>  
version available.

### DI Uniliner<sup>®</sup> Liners for Agilent 5890 Packed Column GC

- Press-Tight<sup>®</sup> taper forms dead-volume-free connection to column.
- Minimizes solvent and peak tailing.
- Use with 0.25, 0.32, and 0.53mm ID capillary columns.
- Can be removed from the septum nut weldment.



| Description   | Fits same liner<br>adaptor as<br>Agilent part # | qty.   | cat.# |
|---|---|--------|-------|
| DI Uniliner <sup>®</sup> Liner for Agilent 5890 Packed Column GC<br>(1.7mm ID x 3.0mm OD x 93mm)  | 5181-3382<br>5080-8732                          | ea.    | 20964 |
| DI Uniliner <sup>®</sup> Liners for Agilent 5890 Packed Column GC<br>(1.7mm ID x 3.0mm OD x 93mm) | 5181-3382<br>5080-8732                          | 5-pk.  | 20965 |
| DI Uniliner <sup>®</sup> Liners for Agilent 5890 Packed Column GC<br>(1.7mm ID x 3.0mm OD x 93mm) | 5181-3382<br>5080-8732                          | 25-pk. | 20966 |

### DI Liner Adaptor for Agilent 5890 Packed Column GC

- Uses standard 1/16-inch capillary nut and ferrules.
- Convenient wrench pad at base.
- Includes 1/4-inch graphite ferrule and stainless steel nut.
- Use with Agilent or Restek DI glass inserts or Restek DI Uniliner<sup>®</sup> liners for an Agilent 5890 packed column GC.

| Description  | Similar to<br>Agilent part # | qty. | cat.# |
|--|------------------------------|------|-------|
| DI Liner Adaptor for Agilent 5890 Packed Column GC | 19244-80540                  | ea.  | 21303 |



**1/16-Inch Capillary Inlet Adaptor Fitting Kit**  
(Split/splitless fitting for 0.25 or 0.32mm ID capillary columns)



For use with 0.25/0.32mm ID columns.

We have specially engineered a high-precision, 1/16-inch split/splitless fitting that accepts standard, two-hole capillary ferrules. Our design makes it easier to install capillary columns because the nut protrudes farther from the insulated injection port chamber. The column insertion depth is the same as the original equipment.

Kit includes adaptor fitting, capillary nut, stainless steel inlet seal, washer, and one 0.4mm ID ferrule.

| Description                                   | qty.   | cat.# |
|---|--------|-------|
| 1/16-Inch Capillary Inlet Adaptor Fitting Kit | kit    | 20633 |
| Replacement Inlet Seal (1.2mm hole)           | 2-pk.  | 20390 |
| Replacement Inlet Seal (1.2mm hole)           | 10-pk. | 20391 |

**1/8-Inch Capillary Inlet Adaptor Fitting Kit**  
(Split/splitless fitting for 0.53mm ID capillary columns)



For use with 0.53mm ID columns.

Our specially engineered high-precision, 1/8-inch split/splitless fitting accepts standard two-hole capillary ferrules and a standard 1/8-inch nut. This design makes column installation easy because the nut protrudes farther from the insulated injection port chamber. The column insertion depth is the same as the original equipment.

Kit includes adaptor fitting, capillary nut, stainless steel inlet seal, washer, and one 0.8mm ID two-hole ferrule.

| Description  | qty.   | cat.# |
|--|--------|-------|
| 1/8-Inch Capillary Inlet Adaptor Fitting Kit           | kit    | 20645 |
| 0.53mm ID Dual-Column Installation (1/16-inch opening) | 2-pk.  | 20392 |
| 0.53mm ID Dual-Column Installation (1/8-inch opening)  | 10-pk. | 20393 |

**Direct Replacement Reducing Nut**

- Made from high-quality stainless steel.
- Meets original equipment performance.



| Description  | Similar to Agilent part # | qty. | cat.# |
|--------------|---------------------------|------|-------|
| Reducing Nut | 18740-20800               | ea.  | 22078 |

**Replacement Ferrules for Dual-Column Confirmational Analysis**

Use 1/16-inch, two-hole ferrules with the 1/16-Inch Capillary Inlet Adaptor Fitting Kit (cat.# 20633); and 1/8-inch, two-hole ferrules with the 1/8-Inch Capillary Inlet Adaptor Fitting Kit (cat.# 20645).



| Two-Hole Ferrule Size | Fits Nut | Fits Column ID | qty.  | Vespel®/Graphite cat.# |
|-----------------------|----------|----------------|-------|------------------------|
| 0.4mm (1/16")         | 1/16"    | 0.25/0.28mm    | 5-pk. | 20241                  |
| 0.5mm (1/16")         | 1/16"    | 0.32mm         | 5-pk. | 20242                  |
| 0.8mm (1/8")          | 1/8"     | 0.45/0.53mm    | 5-pk. | 20246                  |

**Dual-Column Direct Injection Tee**  
(for 1/4-inch packed column inlets)



The tee is designed with a glass spiral to promote sample vaporization and to provide even sample distribution to the two columns. The glass spiral also traps sample residue and minimizes the need for guard columns. A Press-Tight® taper in each outlet leg facilitates a perfect dead-volume-free connection to each analytical column (OD 0.4 to 0.8mm) and allows visual confirmation of the column connection.

| Description                                 | qty. | cat.# |
|---|------|-------|
| DI Tee Kit (includes all fittings/ferrules) | kit  | 20412 |
| Replacement Tee                             | ea.  | 20411 |

**Air Diverters for Agilent GCs**

- Divert GC exhaust heat away from the lab bench.
- Meet OEM performance.
- Easy to install—no tools required.

| Description                            | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Air Diverter for Agilent 5890/6890 GCs | 19247-60510               | ea.  | 22076 |
| Air Diverter for Agilent 6850 GCs      | G2630-60710               | ea.  | 20926 |

**MLE Capillary Tool Kit for Agilent GCs**

Includes:

- capillary installation gauge for Agilent GCs
- injector wrench for Agilent GCs
- septum nut removal tool
- 1/8", 3/16", and 1/4" nylon brushes
- 1/4", 3/8", and 3/16" stainless steel wire tube brushes
- stainless steel surface brush
- 6 stainless steel jet reamers (0.25–0.65mm OD)
- 1/4" x 3/16" open end wrench
- 3/8" x 7/16" open end wrench
- 7/16" x 1/2" open end wrench
- 1/2" x 9/16" open end wrench
- rubber-tipped slide-lock tweezers
- scoring wafers with handles
- inlet liner removal tool
- septum puller
- mini wool puller/insert tool
- 4-inch tapered needle file
- swivel head flashlight
- mini hand drill set
- 15cm compact steel ruler
- pocket magnifier
- high temperature string (1 meter)
- pipe cleaner (12-inch)
- cotton tip swabs (pk. of 25)



new!

| Description                            | qty. | cat.# |
|--|------|-------|
| MLE Capillary Tool Kit for Agilent GCs | kit  | 22186 |

## Cool Tools



### Injector Wrench for Agilent 5890/6890/6850 GCs

- Use to remove the septum nut and weldments during GC maintenance.
- High-quality stainless steel construction.
- Meets original equipment performance.



Use the smaller end to remove the septum nut.



Use the larger end to tighten the split/splitless weldment nut.

| Description                                    | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Injector Wrench for Agilent 5890/6890/6850 GCs | 19251-00100               | ea.  | 22065 |



Make your injection port threads like new!

### Rethreading Tool

- Repair worn or damaged threads in injection ports, fittings, etc.
- Built-in guide to prevent cross-threading.



- 1) Worn & damaged threads can allow oxygen into the system—compromising analytical results and destroying columns.
- 2) Screw the tool completely onto the injection port in a clockwise direction. Unscrew the tool and inspect the threads, repeat as necessary. When done, wipe threads with methanol to remove any debris.

| Description  | qty. | cat.# |
|--|------|-------|
| Rethreading Tool for 1/4" compression fittings (Agilent split/splitless injection ports) | ea.  | 23018 |

Use Restek's Cleaning Kit with ANY injection port!

### FID/Injector Cleaning Kit

The FID/Injector Cleaning Kit includes:

- Nylon tube brushes (1/8", 3/16", 1/4").
- Pipe cleaner.
- Stainless steel tube brushes (3/8", 3/16", 1/4").
- Stainless steel surface brush.
- Stainless steel jet reamers.
- Emery cloth.



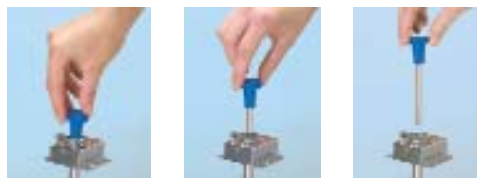
| Description               | qty. | cat.# |
|---------------------------|------|-------|
| FID/Injector Cleaning Kit | kit  | 20120 |



No more burned fingers!

### Inlet Liner Removal Tool

- Easily remove liner from injector—no more burned fingers.
- Made from high-temperature silicone.
- Won't chip or crack the liner.



| Description              | qty.  | cat.# |
|--------------------------|-------|-------|
| Inlet Liner Removal Tool | 3-pk. | 20181 |

### new! Flashlight with Swivel Head

- Ideal for tight spaces—like inside a GC oven.
- Uses two AA batteries (included).



| Description                 | qty. | cat.# |
|-----------------------------|------|-------|
| Flashlight with Swivel Head | ea.  | 22187 |

### Injection Port Split/Splitless Weldment Retaining Ring Pliers

- Easily removes snap ring on split/splitless weldment assemblies.
- Use with Agilent 5890/6890/6850 GCs.

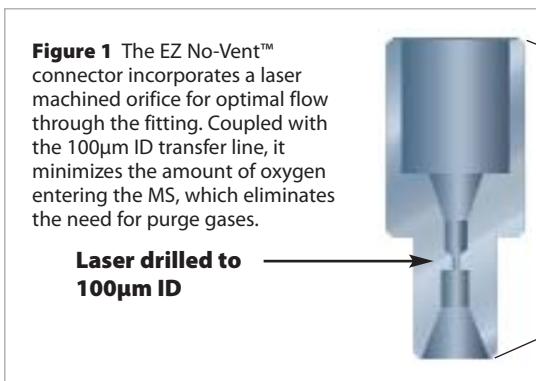


| Description   | qty. | cat.# |
|---|------|-------|
| Injection Port Split/Splitless Weldment Retaining Ring Pliers | ea.  | 26186 |

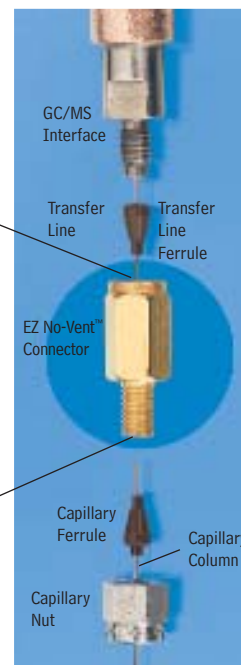
**EZ No-Vent™ GC Column-Mass Spectrometer Connector**

- Change GC/MS columns in minutes without venting—100µm transfer line throttles vacuum and prevents venting.
- Easy to install and maintain—no special tools or plumbing required.
- Gold-plated body for inertness.
- Deactivated transfer line keeps analytes focused; high-temperature polyimide ferrules eliminate leaks at the problematic transfer line fitting.
- Lower cost than other “no-vent” fittings.
- Available for Agilent GCs with 5971/5972 or 5973 GC/MS.

We designed the EZ No-Vent™ GC column-mass spectrometer connector to be simple and easy to use. A critical orifice in the EZ No-Vent™ connector minimizes the amount of oxygen allowed into the MS source, eliminating the need for purge gas and enabling you to skip the lengthy vent and pump-down cycle otherwise required when you make a column change. This can save nearly a day of downtime with each column change. The EZ No-Vent™ connector easily attaches to the MS source without special tools or extra plumbing. Figure 1 shows the internal structure of the connector.

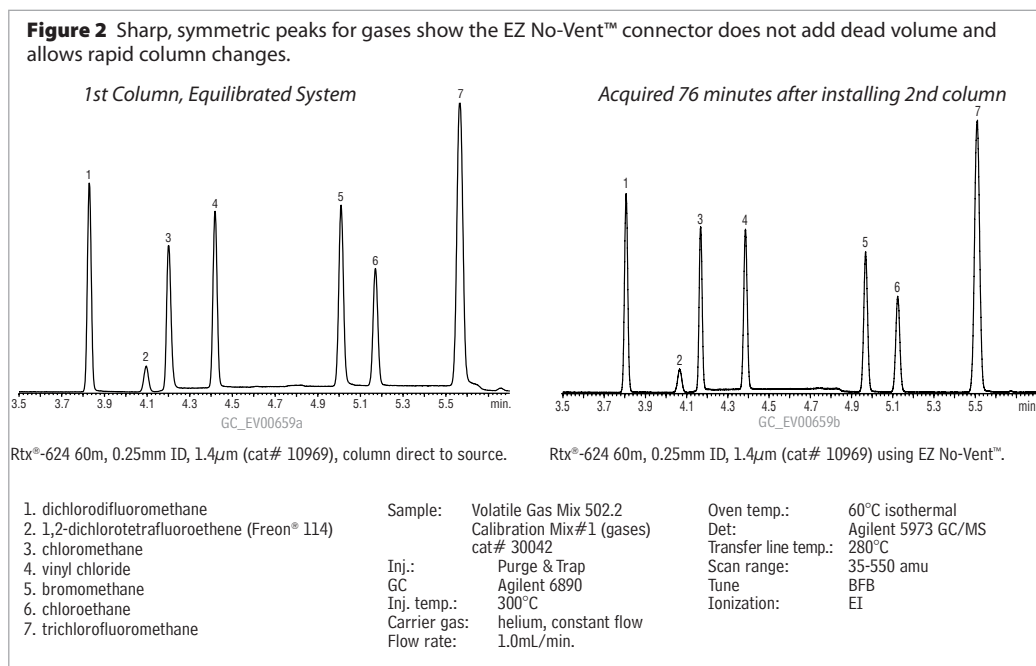


**Figure 1** The EZ No-Vent™ connector incorporates a laser machined orifice for optimal flow through the fitting. Coupled with the 100µm ID transfer line, it minimizes the amount of oxygen entering the MS, which eliminates the need for purge gases.



Change columns in minutes—without venting!

Kit installs easily, without special tools or plumbing.



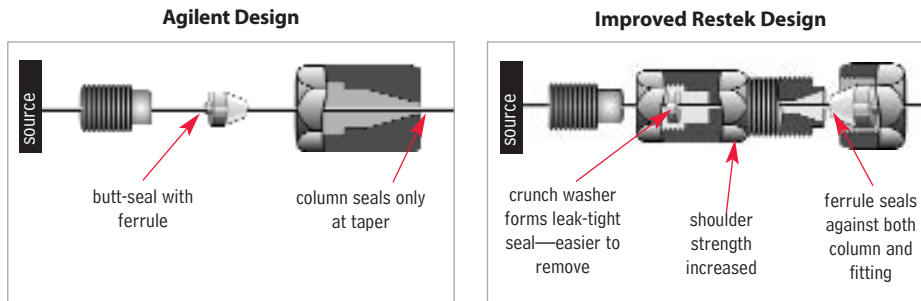
| Description   | qty.  | cat.# |
|---|-------|-------|
| EZ No-Vent™ Connector Kit for Agilent 5971/5972 and 5973 GC/MS<br>Kit includes: EZ No-Vent™ Connector, two 0.4mm ID ferrules for capillary column, two 0.4mm ID ferrules for transfer line, 100µm deactivated transfer line (3 ft.), column plug, column nut. | kit   | 21323 |
| Replacement ferrules for connecting capillary column to EZ No-Vent™ Connector:<br>0.4mm ID (Polyimide)  | 2-pk. | 21015 |
| 0.5mm ID (Polyimide)  | 2-pk. | 21016 |
| Replacement ferrules for connecting transfer line to EZ No-Vent™ Connector: 0.4mm ID  | 2-pk. | 21043 |
| Replacement 100µm deactivated transfer line   | 3 ft. | 21018 |
| Replacement EZ No-Vent™ Column Nut  | 5-pk. | 21900 |
| Replacement EZ No-Vent™ Plug  | 2-pk. | 21915 |
| Open-End Wrenches (1/4" x 5/16")  | 2-pk. | 20110 |



Agilent's MSD interface uses a butt-seal to simultaneously seal the MSD source to the capillary column. This system is prone to leakage. Restek's MSD conversion fitting is designed with two separate seals to reduce the chance of leaks: a crunch washer seals the MSD conversion fitting to the source; a ferrule seals the capillary tubing to the conversion fitting.

**MSD Conversion Fitting**

- A flat, soft aluminum sealing ring deforms and butt-seals against the MSD interface.
- A standard Vespel® ferrule seals the column and 1/16-inch stainless steel nut.
- Fitting is constructed of nickel-plated brass for longevity and softness.
- Use any standard Vespel® or Vespel®/graphite 1/16-inch ferrule.
- Includes a 1/16-inch stainless steel nut and two replacement sealing rings. Order ferrules separately.



| Description                                      | qty.  | cat.# |
|--|-------|-------|
| MSD Conversion Fitting                           | ea.   | 21314 |
| Replacement Ring Seal for MSD Conversion Fitting | 2-pk. | 21313 |



**MSD Source Nut**

- 1.2mm nut bore permits easy removal of ferrules with a standard tapered-needle file (cat.# 20106).
- Made of brass to prevent thread-stripping on the transfer line.
- Improved design enhances ease of threading onto the transfer line and improves overall lifetime.

| Description               | Similar to Agilent part # | qty.  | cat.# |
|---------------------------|---------------------------|-------|-------|
| (Detector) MSD Source Nut | 05988-20066               | 2-pk. | 20643 |

**Capillary Installation Gauge for Agilent 5973/5975 MS**

- Seats ferrules onto column for consistent installations.
- Made from high-quality stainless steel.



Install the nut and ferrule onto the column, then insert the column through the installation tool, exposing several centimeters at the exit end. Tighten the nut.

Score and remove the exposed end of the column, then loosen the nut.

The ferrule will be properly seated and should remain in place when light force is applied. Install the column into the GC/MS interface.

| Description   | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| Capillary Installation Gauge for Agilent 5973/5975 MS | G1099-20030               | ea.  | 21894 |



**Gold Tip Transfer Line**

- For use with Agilent 5971/5972 MS Systems.
- Gold-plated for inertness.
- Meets or exceeds OEM performance.

| Description            | Similar to Agilent part # | qty. | cat.# |
|------------------------|---------------------------|------|-------|
| Gold Tip Transfer Line | 05971-20305               | ea.  | 24699 |

**Replacement Interface with Bellows for Agilent 5971/5972 MS**

- Meets or exceeds OEM performance.
- Made of high-quality stainless steel.

| Description  | Similar to<br>Agilent part # | qty. | cat.# |
|--|------------------------------|------|-------|
| Replacement Interface with Bellows<br>for Agilent 5971/5972 MS | 05971-60302                  | ea.  | 22659 |

**Replacement Interface Guide Tube for Agilent 5971/5972 MS**

- Meets or exceeds OEM performance.
- Made of high-quality stainless steel.

| Description  | Similar to<br>Agilent part # | qty. | cat.# |
|--|------------------------------|------|-------|
| Replacement Interface Guide Tube<br>for Agilent 5971/5972 MS | 05971-20307                  | ea.  | 22660 |

**Replacement Cold Sensor for Agilent 5971/5972 MS Diffusion Pump**

- Meets or exceeds OEM performance.
- Made of high-quality stainless steel.

| Description  | Similar to<br>Agilent part # | qty. | cat.# |
|--|------------------------------|------|-------|
| Replacement Cold Sensor<br>for Agilent 5971/5972 MS Diffusion Pump | 3103-0145                    | ea.  | 22661 |

**Replacement Diffusion Pump Fan Assemblies for Agilent 5971/5972 MS**

- 110/120 VAC

| Description  | Similar to<br>Agilent part # | qty. | cat.# |
|--|------------------------------|------|-------|
| Replacement Diffusion Pump Fan Assembly<br>for Agilent 5971 MS | 05971-60540                  | ea.  | 22662 |
| Replacement Diffusion Pump Fan Assembly<br>for Agilent 5972 MS | 05972-60540                  | ea.  | 22663 |

**Rough Pump Oil #19 for MSD Pumps, Oil Vacuum Pump**

- Formulated from crude oil stocks known for their durability and line lubricating qualities.
- Use in Agilent 5973/5972/5971 and GCD mass spec systems, or in other manufacturers' MSD systems that require rough pump oil.
- Under average use, the oil in the foreline rough pump should be replaced every six months.

| Description                  | Similar to<br>Agilent part # | qty.    | cat.# |
|------------------------------|------------------------------|---------|-------|
| Rough Pump Oil for MSD Pumps | 6040-0834                    | 1 liter | 22687 |

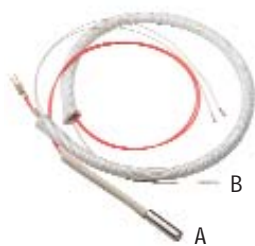
**Ion Source Cleaning Powder**

- Use this aluminium oxide powder to clean surfaces that contact the sample or ion beam when you encounter poor sensitivity and inadequate abundances at high masses.

| Description                | Similar to<br>Agilent part # | qty.  | cat.# |
|----------------------------|------------------------------|-------|-------|
| Ion Source Cleaning Powder | 8660-0791                    | 1 kg. | 22685 |



## Detector Supplies



### Heater Cartridge & PRT Sensor for Agilent 5890 GCs

- Use with 5890 FID and split/splitless weldments.
- Meets or exceeds OEM performance.

| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| A + B) Injector/FID Heater + Injector/FID PRT Sensor | 05890-61140               | ea.  | 22068 |
| A) Injector/FID Heater                               | 19231-60620               | ea.  | 22069 |
| B) Injector/FID PRT Sensor                           | 19231-60660               | ea.  | 23035 |



### FID Collector Housing Kits for Agilent GCs

- Meets or exceeds OEM performance.

| Description   | Similar to Agilent part # | qty.   | cat.# |
|---|---------------------------|--------|-------|
| FID Collector Housing Kit for Agilent 5890 GCs (includes collector body, spanner nut, and silicone washer—order mount separately) | 19231-20920               | kit    | 23037 |
| FID Collector Housing Kit for Agilent 6890 GCs (includes collector body, silicone washer, nut, and mount)                         | G1531-20550               | kit    | 23045 |
| FID Collector Housing for Agilent 6890 GCs  | G1531-20740               | ea.    | 23044 |
| Replacement Silicone Washers for FID Collector Housing for Agilent 5890/6890 GCs  | 5180-4165                 | 12-pk. | 23064 |



### FID Collector Mount for Agilent GCs

- Meets or exceeds OEM performance.

| Description                                 | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| A) FID Collector Mount for Agilent 5890 GCs | 19231-20930               | ea.  | 23036 |
| B) FID Collector Mount for Agilent 6890 GCs | G1531-20550               | ea.  | 23043 |



### FID Base Weldment for Agilent GCs

- Meets or exceeds OEM performance.
- Includes brass nut.

| Description   | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| A) FID Base Weldment for Agilent 5890 GCs                             | 19231-80580               | ea.  | 23041 |
| B) FID Base Weldment, Pack Column FID, for Agilent 6850/6890 GCs      | G1531-80580               | ea.  | 23052 |
| C) FID Base Weldment, Capillary Column FID, for Agilent 6850/6890 GCs | G1531-80630               | ea.  | 23053 |



### Spanner Wrench for Agilent 5890/6890/6850 FID Collector Assemblies

- Easily remove the nut from the FID collector without damaging the nut.
- Unique, ergonomic handle—easy to grip.



Remove FID ignitor castle.

Easily loosen the nut by aligning the two pins on the bottom of the wrench with the two open slots on the nut...

...then turn counterclockwise...

...and remove.

| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Spanner Wrench for Agilent 5890/6890/6850 FID Collector Assembly | 19231-00130               | ea.  | 22329 |

### Direct Replacement FID Collector Assembly for Agilent 5890 GCs

- Constructed of high-quality stainless steel.
- Meets or exceeds OEM performance.

| Description                                     | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| FID Collector Assembly (includes insulators)    | 19231-60690               | kit  | 23010 |
| FID Collector Assembly w/Siltek® Ignitor Castle | —                         | kit  | 21131 |

### Replacement FID Parts for Agilent 5890 GCs

- Meets or exceeds OEM performance.

| Description                            | Similar to Agilent part #                                | qty. | cat.# |
|--|--|------|-------|
| A) FID Collector (includes insulators) | 19231-20970<br>19231-20960<br>19231-20950<br>19231-20940 | ea.  | 21138 |
| B) FID Collector Nut and Washer        | 5181-3311  | set  | 21136 |
| C) FID Ignitor*                        | 19231-60680  | ea.  | 21001 |
| D) FID Ignitor Castle                  | 19231-20910  | ea.  | 21137 |
| Siltek® FID Ignitor Castle             | —  | ea.  | 21135 |

\*Also fits OI Analytical 4410 detector (similar to OI part # 191833).



**SILTEK®**  
versions available.

### Direct Replacement FID Collector Assembly for Agilent 6890/6850 GCs

- Constructed of high-quality stainless steel.
- Meets or exceeds OEM performance.

| Description                                     | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| FID Collector Assembly (includes insulator)     | G1531-60690               | kit  | 21699 |
| FID Collector Assembly w/Siltek® Ignitor Castle | —                         | kit  | 21132 |

### Replacement FID Parts for Agilent 6890/6850 GCs

- Meets or exceeds OEM performance.

| Description                            | Similar to Agilent part #  | qty. | cat.# |
|--|----------------------------|------|-------|
| A) FID Collector (includes insulators) | G1531-20690<br>G1531-20700 | ea.  | 21139 |
| B) FID Collector Nut and Washer        | 19231-20940<br>5181-3311   | set  | 21136 |
| C) FID Ignitor*                        | 19231-60680                | ea.  | 21001 |
| D) FID Ignitor Castle                  | 19231-20910                | ea.  | 21137 |
| Siltek® FID Ignitor Castle             | —                          | ea.  | 21135 |

\*Also fits OI Analytical 4410 detector (similar to OI part # 191833).



### Direct Replacement FID Flow Measuring Adaptor for Agilent 5890/6890/6850 GCs

- Makes setting flows easy.
- Meets or exceeds OEM performance.

| Description                | Similar to Agilent part # | qty. | cat.# |
|----------------------------|---------------------------|------|-------|
| FID Flow Measuring Adaptor | 19301-60660               | ea.  | 21000 |



## Detector Supplies

### Replacement Jets

#### Standard Version

- Engineered with a fluted tip to guide the capillary column into the jet.
- Threads specially coated for easy installation and removal.
- Special processing ensures the highest degree of cleanliness.

#### High-Performance Version

- Similar to the standard version, but Siltek® treated.
- Extremely inert, use with active compounds.



#### Capillary Adaptable FID Replacement Jet for Agilent 5890/6890/6850 GCs (0.011-inch ID tip)

| Description                      | Similar to     |      | cat.# | qty.  | cat.# |
|----------------------------------|----------------|------|-------|-------|-------|
|                                  | Agilent part # | qty. |       |       |       |
| Standard                         | 19244-80560    | ea.  | 20670 | 3-pk. | 20671 |
| High-Performance Siltek® Treated | 19244-80560    | ea.  | 20672 | 3-pk. | 20673 |

#### Capillary Dedicated FID Replacement Jet for Agilent 6890/6850 GCs

| 0.011-Inch ID                    | Similar to     |      | cat.# | qty.  | cat.# |
|----------------------------------|----------------|------|-------|-------|-------|
|                                  | Agilent part # | qty. |       |       |       |
| Standard                         | G1531-80560    | ea.  | 21621 | 3-pk. | 21682 |
| High-Performance Siltek® Treated | G1531-80560    | ea.  | 21620 | 3-pk. | 21683 |

#### Packed Column Replacement Jets for Agilent 5890/6890/6850 GCs

| 0.018-Inch ID                    | Similar to     |      | cat.# | qty.  | cat.# |
|----------------------------------|----------------|------|-------|-------|-------|
|                                  | Agilent part # | qty. |       |       |       |
| Standard                         | 18710-20119    | ea.  | 21694 | 3-pk. | 21695 |
| High-Performance Siltek® Treated | 18710-20119    | ea.  | 21696 | 3-pk. | 21697 |

| 0.030-Inch ID                    | Similar to     |      | cat.# | qty.  | cat.# |
|----------------------------------|----------------|------|-------|-------|-------|
|                                  | Agilent part # | qty. |       |       |       |
| Standard                         | 18789-80070    | ea.  | 21688 | 3-pk. | 21689 |
| High-Performance Siltek® Treated | 18789-80070    | ea.  | 21686 | 3-pk. | 21687 |

## tech tip

#### Which FID Jet Should I Use?

There are two FID jet configurations for Agilent GCs. The longer “adaptable” jet fits both 5890 and 6890 GCs, and can be used with capillary or packed columns. The shorter “dedicated” jet is for the FID in the 6890 GC that is designed only for use with capillary columns.

restek  
innovation!

#### FID Jet Removal Tool for Agilent 5890/6890/6850 FIDs

- Securely grips jet in socket for easy removal or installation.
- Unique, ergonomic handle—easy to hold.



Slip tool  
over FID  
jet...



...loosen  
jet...



...and  
remove.

| Description  | qty. | cat.# |
|--|------|-------|
| FID Jet Removal Tool for Agilent 5890/6890/6850 FIDs | ea.  | 22328 |

#### Torx® Screwdriver Set

- Set includes TR-10, TR-15, and TR-20.
- Ideal for performing routine maintenance on Agilent 6890 GCs.



| Description           | qty. | cat.# |
|-----------------------|------|-------|
| Torx® Screwdriver Set | set  | 23034 |

### Detector Plug Nut

Use Restek's detector plug nut to cap off a detector for thermal cleaning, to check detector or make-up gas flow rates, or to prevent hydrogen from accidentally diffusing into the oven from an unused detector base.

| Description       | Similar to Agilent part # | qty.  | cat. # |
|-------------------|---------------------------|-------|--------|
| Detector Plug Nut | 5020-8294                 | 2-pk. | 21883  |



### FID/NPD Adaptor Fitting

- Easy to use, sturdy, compact stainless steel fitting.
- 1/16-inch nut uses standard graphite or Vespel®/graphite ferrules.
- Wrench pad won't turn when installing a capillary column.
- Includes 1/4- and 1/16-inch stainless steel nuts, and 1/4-inch Vespel® and 0.4mm ID graphite ferrules.

| Description             | qty. | cat. # |
|-------------------------|------|--------|
| FID/NPD Adaptor Fitting | kit  | 20884  |



### FID/NPD Capillary Adaptor Fitting for Agilent 5890/6890/6850 GCs

- High-quality stainless steel construction.
- Meets or exceeds OEM performance.

| Description                       | Similar to Agilent part # | qty. | cat. # |
|-----------------------------------|---------------------------|------|--------|
| FID/NPD Capillary Adaptor Fitting | 19244-80610               | ea.  | 22077  |



### TCD Adaptor Fitting

| Description         | Similar to Agilent part #  | qty. | cat. # |
|---------------------|----------------------------|------|--------|
| TCD Adaptor Fitting | 19302-80020<br>G1532-80540 | ea.  | 20269  |



### ECD/FID Dual-Purpose Make-Up Gas Kit

Incorporates a better make-up gas flow profile and a straight section of inert Siltek® tubing as the capillary guide. To add make-up gas to an FID, remove the tubing guide and insert an FID jet tail. A direct replacement fitting with a special end connector is available for GCs factory-equipped with make-up gas. A complete kit is available for plumbing GCs that are not factory-equipped with make-up gas. Complete kit includes make-up gas fitting, Siltek® treated guide, 1/4" nut and ferrules, 1/16" nut, 0.4mm ID graphite ferrule, and fine metering valve.

| Description  | qty.  | cat. # |
|--|-------|--------|
| ECD/FID Dual-Purpose Make-Up Gas Kit   | kit   | 21300  |
| ECD/FID Replacement Fitting for Restek Make-up Gas Kit   | ea.   | 21324  |
| Replacement ECD/FID Siltek® Guide  | 2-pk. | 21302  |
| ECD/FID Direct Replacement Fitting (includes 1/4" nut, Vespel®/graphite ferrule, 1/16" nut, 0.4mm ID graphite ferrule) | ea.   | 21301  |



Rugged design!

### FID Gauge Pack for Agilent 5890 GCs

Pressure regulators and gauges for air & hydrogen. The 1/8-inch bulkhead allows easy hookup to instrument. Rated for inlet pressures to 250psi, outlet pressures of 0 to 60psi.

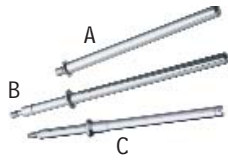
| Description                         | qty. | cat. # |
|-------------------------------------|------|--------|
| FID Gauge Pack for Agilent 5890 GCs | ea.  | 22071  |



## Autosampler Parts

### Replacement Parts for Agilent Autosamplers

- All parts meet or exceed OEM performance.



### Injector Mounting Posts for Agilent Autosamplers

| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| A) Injector Mounting Post for Agilent 7673 Series Autosamplers for use with 5890 GCs | 18597-60805               | ea.  | 21236 |
| B) Injector Mounting Post for Agilent 7673 Series Autosamplers for use with 6890 GCs | 07673-21140               | ea.  | 21237 |
| C) Injector Mounting Post for Agilent 7683 Series Autosamplers                       | G2613-20500               | ea.  | 21172 |



### Turret Tray Assembly for Agilent 5890/6890 GC

- Holds sample, waste and solvent vials.

| Description                                   | qty. | cat.# |
|---|------|-------|
| Turret Tray Assembly for Agilent 5890/6890 GC | ea.  | 22855 |



### Autosampler Plunger Carrier Belt

| Description  | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Autosampler Plunger Carrier Belt for Agilent 7673A and 7673B | 07673-61275               | ea.  | 22695 |



### Carriage Motor Belt

| Description                                     | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| Carriage Motor Belt for Agilent 7673A and 7673B | 1500-0676                 | ea.  | 22692 |

new!



### Z-Belt for Agilent 7673B Autosampler

| Description                          | Similar to Agilent part # | qty. | cat.# |
|--------------------------------------|---------------------------|------|-------|
| Z-Belt for Agilent 7673B Autosampler | 1500-0803                 | ea.  | 22332 |



### Carriage Motor

| Description                                | Similar to Agilent part # | qty. | cat.# |
|--|---------------------------|------|-------|
| Carriage Motor for Agilent 7673A and 7673B | 07673-60890               | ea.  | 22693 |



### Injector Turret Motor for Agilent 7673A & 7673B Injectors

| Description   | Similar to Agilent part # | qty. | cat.# |
|---|---------------------------|------|-------|
| Injector Turret Motor for Agilent 7673A & 7673B Injectors | 07673-60810               | ea.  | 22337 |

**Replacement Cables**

**(for Agilent GCs, Integrators, & Autosamplers)**

- Priced less than original equipment.
- Instructions and wiring diagrams included.
- Manufactured with only the highest-quality components.

did you **know?**

Restek provides pin schematics.

Connect an Agilent 5890 GC to an Agilent integrator (for second Inet integrator).

| Description        | Similar to Agilent part # | length | qty.  | cat.# |
|--------------------|---------------------------|--------|-------|-------|
| Replacement Cable  | 35900-60610               | 6 ft.  | ea.   | 20650 |
| Replacement Cables | 35900-60610               | 6 ft.  | 2-pk. | 20651 |



Connect an Agilent 5890 GC to an Agilent 3396 integrator to enable remote starts (non-Inet connection from GC to integrator).

| Description       | Similar to Agilent part # | length | qty. | cat.# |
|-------------------|---------------------------|--------|------|-------|
| Replacement Cable | 03394-60560               | 6 ft.  | ea.  | 20654 |



Connect an Agilent 3396 integrator to remote-start another piece of equipment or to start the Agilent 3396 integrator from that other piece of equipment.

| Description        | Similar to Agilent part # | length | qty.  | cat.# |
|--------------------|---------------------------|--------|-------|-------|
| Replacement Cable  | 03394-60540               | 6 ft.  | ea.   | 20655 |
| Replacement Cables | 03394-60540               | 6 ft.  | 2-pk. | 20656 |



Connect an Agilent 5890 GC to a non-Agilent integrator or standard strip chart recorder.

| Description        | Similar to Agilent part # | length | qty.  | cat.# |
|--------------------|---------------------------|--------|-------|-------|
| Replacement Cable  | 05890-60800               | 6 ft.  | ea.   | 20652 |
| Replacement Cables | 05890-60800               | 6 ft.  | 2-pk. | 20653 |



Connect an Agilent 5890 GC to remote-start another piece of equipment or to start the Agilent 5890 GC from that piece of equipment.

| Description       | Similar to Agilent part # | length | qty. | cat.# |
|-------------------|---------------------------|--------|------|-------|
| Replacement Cable | 05890-61080               | 6 ft.  | ea.  | 20657 |



Connect an Agilent 3396 integrator to a non-Agilent GC.

| Description        | Similar to Agilent part # | length | qty.  | cat.# |
|--------------------|---------------------------|--------|-------|-------|
| Replacement Cable  | 35900-60630               | 6 ft.  | ea.   | 20658 |
| Replacement Cables | 35900-60630               | 6 ft.  | 2-pk. | 20659 |



Connect an Agilent 5890 GC to an Agilent 35900C Interface or to an Agilent 7673A Autosampler to enable remote starts.

| Description        | Similar to Agilent part # | length | qty.  | cat.# |
|--------------------|---------------------------|--------|-------|-------|
| Replacement Cable  | 35900-60700               | 6 ft.  | ea.   | 20660 |
| Replacement Cables | 35900-60700               | 6 ft.  | 2-pk. | 20661 |



Automatic liquid sampler stop/start cable for Agilent GCs.

| Description       | Similar to Agilent part # | length | qty. | cat.# |
|-------------------|---------------------------|--------|------|-------|
| Replacement Cable | G1530-60930               | 7 ft.  | ea.  | 20929 |



Connect an Agilent 6890 GC to a PC 9F/9F (RS232).

| Description       | Similar to Agilent part # | length | qty. | cat.# |
|-------------------|---------------------------|--------|------|-------|
| Replacement Cable | G1530-60600               | 6 ft.  | ea.  | 22694 |





### GC Racer by Zip Scientific

- Saves time and money by increasing throughput.
- Makes fast GC possible with any capillary GC column.
- Easy to operate and install—truly a “plug and use” accessory.

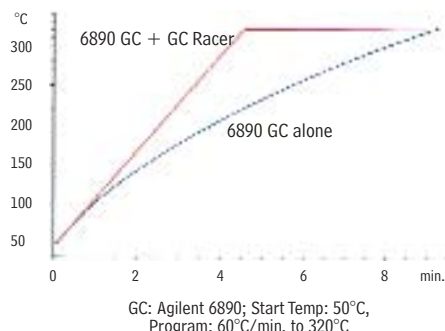
Fast gas chromatographic temperature programs can speed up elution of high boiling point compounds and late eluters, but often are not used to maximum advantage. The Agilent 5890 has a maximum temperature program rate of 70°C/min., but the factory heating elements in the 5890 only allow this maximum rate to be maintained up to a temperature of 100°C. The Agilent 6890 allows a maximum ramp rate of 75°C/min. at starting temperatures of 50–70°C and 20°C/min. at starting temperatures of 300–450°C.\* For analysts trying to push temperature ramps as fast as possible, these restricted program rates can lead to longer analysis time and broader peaks.

The GC Racer system will maintain a temperature program rate of 70°C/min. up to 350°C or 60°C/min. to temperatures as high as 450°C in an Agilent 5890 or a rate of 70°C/min. up to 400°C in an Agilent 6890.

Restek and Zip Scientific have teamed up to bring you the GC Racer temperature programmer, a system that enhances conventional ovens with an auxiliary heater that is controlled by the GC. The GC Racer consists of a control unit and a resistive heating element that is placed on the floor of the GC oven. The heating element is connected to the controller, which is plugged into the main PC board of the GC and into a 120V standard grounded wall outlet. When the GC Racer controller detects that the factory heating elements are not keeping up with the programmed heating rate, the GC Racer heater is brought into the circuit to augment the heat being supplied to the oven.

The auxiliary heater design is similar to that of the original GC heater. At no time during the installation of the GC Racer system is the column removed from the oven, or disconnected from the detector or injection port.

**Figure 1** Faster temperature programs increase sample throughput.



### a plus 1 story

“We tried a GC Racer Temperature Programmer from Restek and now we want more! With the GC Racer, we can perform high

speed temperature programming to get the results we need, and we can use conventional columns and fittings. This is a great time and cost savings for us. Not only that, but, with this system, we don’t experience any leaks at the fittings, so we can use it with our mass spectrometer. All this for an economical price.”

**Josh Hildabrand**, Chemist, and **William Mock**, Lab Manager, Environmental Science Corporation

The simplicity of its components and installation make the Zip Scientific GC Racer system a valuable tool in the quest for high-speed GC, and a must-have add-on accessory for every 5890 or 6890 GC. The speed of analysis that can be achieved and the ease of installation will lead to direct savings of time and money by decreasing run time and increasing sample throughput.

### for more info

GC Racer brochure  
(lit. cat.# 59297) and  
Applications Note  
(lit. cat.# 59457)

Download your free printable pdfs from our website.



| Description                                   | voltage  | qty. | cat.# |
|---|----------|------|-------|
| GC Racer for Agilent 5890 Series II (only) GC | 120 volt | ea.  | 23024 |
| GC Racer for Agilent 5890A (only) GC          | 120 volt | ea.  | 23025 |
| GC Racer for Agilent 6890 (only) GC           | 120 volt | ea.  | 23028 |

\*Use of higher voltage and amperage or a special insert purchased with the GC will allow slightly higher ramp rates.

**Vespel® Ferrules**

- 100% high-temperature polyimide.
- Stable to 350°C.
- Durable, leak-tight.

**Graphite Ferrules**

- Pre-conditioned to eliminate out-gassing.
- High-purity, high-density graphite.
- Smoother surface and cleaner edges than conventional graphite ferrules.
- Contain no binders that can off-gas or adsorb analytes.
- Stable to 450°C.

**Vespel®/Graphite Ferrules**

- 60%/40% Vespel®/graphite blend, offering the best combination of sealing and ease of workability.
- Seal with minimal torque, reusable, and preferred for vacuum and high-pressure uses.
- Stable to 400°C.
- Recommended for mass spec transfer lines.



Vespel® ferrules

**Capillary Ferrules—For 1/16-Inch Compression-Type Fittings**

| Ferrule ID | Fits Column ID   | qty.   | Vespel® | Graphite | Vespel®/Graphite |
|------------|------------------|--------|---------|----------|------------------|
| 0.3mm      | < 0.18mm         | 10-pk. | 22213   | 20233    | 20275            |
| 0.4mm      | 0.18/0.25/0.28mm | 10-pk. | 22214   | 20200    | 20211            |
| 0.4mm      | 0.18/0.25/0.28mm | 50-pk. | —       | 20227    | 20229            |
| 0.5mm      | 0.32mm           | 10-pk. | 22215   | 20201    | 20212            |
| 0.5mm      | 0.32mm           | 50-pk. | —       | 20228    | 20231            |
| 0.6mm      | 0.28mm**         | 10-pk. | —       | —        | 20232            |
| 0.8mm      | 0.45/0.53mm      | 10-pk. | 22216   | 20202    | 20213            |
| 0.8mm      | 0.45/0.53mm      | 50-pk. | —       | 20224    | 20230            |
| 1.0mm      | 0.75mm*          | 10-pk. | 22217   | 21058    | 24912            |
| 1.2mm      | 0.75mm           | 10-pk. | 22218   | —        | —                |
| 1.6mm      | 1.00mm*          | 10-pk. | —       | 21060    | —                |



**Encapsulated Ferrules—For 1/16-Inch Compression Fittings**

- Reusable—will not deform and stick in fittings.
- Less torque needed to seal ferrule.
- Restek’s unique blend of graphite minimizes fragmentation and outgassing.

| Ferrule ID | Fits Column ID | qty.   | cat.# |
|------------|----------------|--------|-------|
| 0.4mm      | 0.25mm         | 10-pk. | 21036 |
| 0.5mm      | 0.32mm         | 10-pk. | 21037 |
| 0.8mm      | 0.53mm         | 10-pk. | 21038 |



Reusable!

**Compact Ferrules—For Agilent 5890/6890/6850 GCs**

| Ferrule ID | Fits Column ID | qty.   | Graphite | Vespel®/Graphite |
|------------|----------------|--------|----------|------------------|
| 0.4mm      | 0.25/0.28mm    | 10-pk. | 20250    | 20238            |
| 0.4mm      | 0.25/0.28mm    | 50-pk. | 20251    | 20239            |
| 0.5mm      | 0.32mm         | 10-pk. | 21007    | 20248            |
| 0.5mm      | 0.32mm         | 50-pk. | 21008    | 20249            |
| 0.8mm      | 0.45/0.53mm    | 10-pk. | 20252    | 20263            |
| 0.8mm      | 0.45/0.53mm    | 50-pk. | 20253    | 20264            |
| 1.0mm      | 0.75mm*        | 10-pk. | 21059    | 21056            |
| 1.6mm      | 1.00mm*        | 10-pk. | 21061    | 21057            |



\*For micropacked columns.  
 \*\*For 0.28mm MXT® columns.

## Ferrules



### Standard Ferrules—For 1/16-, 1/8-, and 1/4-Inch Fittings

| Fitting Size | Ferrule ID      | qty.   | Vespel® | Graphite | Vespel®/Graphite |
|--------------|-----------------|--------|---------|----------|------------------|
| 1/4"         | 3/16"           | 5-pk.  | —       | —        | 20258            |
| 1/16"        | 1/16"           | 10-pk. | 22210   | 20207    | 20218            |
| 1/8"         | 1/8"            | 10-pk. | 22211   | 20208    | 20219            |
| 1/8"         | reduce to 1/16" | 10-pk. | —       | 20209    | 20220            |
| 1/4"         | 1/4"            | 10-pk. | 22212   | 20210    | 20221            |
| 1/4"         | reduce to 1/8"  | 10-pk. | 22219   | 20225    | 20222            |
| 1/4"         | reduce to 1/16" | 10-pk. | —       | 20226    | 20223            |



### Two-Hole Ferrules—For 1/8-Inch and 1/16-Inch Compression-Type Fittings

| Fitting Size | Ferrule ID | Fits Column ID | qty.  | Vespel®/Graphite |
|--------------|------------|----------------|-------|------------------|
| 1/16"        | 0.4mm      | 0.25/0.28mm    | 5-pk. | 20241            |
| 1/16"        | 0.5mm      | 0.32mm         | 5-pk. | 20242            |
| 1/8"         | 0.8mm      | 0.45/0.53mm    | 5-pk. | 20246            |



### Reducing Ferrules

| Fitting Size | Ferrule ID | Fits Column ID | qty.  | Graphite | Vespel®/Graphite |
|--------------|------------|----------------|-------|----------|------------------|
| 1/8"         | 0.4mm      | 0.25mm         | 5-pk. | 20205    | 20254            |
| 1/8"         | 0.5mm      | 0.32mm         | 5-pk. | 20205    | 20255            |
| 1/8"         | 0.8mm      | 0.53mm         | 5-pk. | 20206    | 20215            |
| 1/4"         | 0.4mm      | 0.25mm         | 5-pk. | 20203    | —                |
| 1/4"         | 0.5mm      | 0.32mm         | 5-pk. | 20203    | 20257            |
| 1/4"         | 0.8mm      | 0.45/0.53mm    | 5-pk. | 20204    | 20217            |



### Blank Ferrules—For 1/16-Inch Fittings

| Fitting Size | Ferrule ID | qty.   | Vespel®/Graphite |
|--------------|------------|--------|------------------|
| 1/16"        | no hole    | 10-pk. | 20240            |



### Alumaseal™ Ferrules\*

- No more ferrule fragments in the transfer line; aluminum construction—will not crack or fragment.
- No retightening required after temperature cycles—excellent for GC/MS.
- Eliminate out-gassing, make leak-tight seals, for less detector noise.
- Unique two-piece design permanently locks on fused silica tubing without causing breakage.
- Will not stick in fittings, unlike Vespel® or graphite.
- Stable to 550°C.
- Use with any 1/16" compression-type fitting.

| Ferrule ID | Fits Column ID | qty.   | cat.# |
|------------|----------------|--------|-------|
| 0.4mm      | 0.25mm         | 10-pk. | 21472 |
| 0.5mm      | 0.32mm         | 10-pk. | 21473 |
| 0.8mm      | 0.53mm         | 10-pk. | 21474 |

\*Patent pending.



## tech tip

### Choosing the Right Ferrule

Although graphite and Vespel®/graphite ferrules each have advantages and disadvantages, the choice of ferrule composition is largely a personal preference. Graphite ferrules are soft, easy to seal, stable to 450°C, and contain no binders that might off-gas. Vespel®/graphite ferrules work better for vacuum and high-pressure applications (e.g., GC/MS) because they will not fragment or allow oxygen to permeate into the system, whereas graphite ferrules will. Because Vespel®/graphite ferrules are made from a harder material, they might require retightening after several temperature cycles. Alumaseal™ ferrules are ideal for GC/MS. They will not crack or fragment and require no retightening after temperature cycles.

**Universal Press-Tight® Connectors**

- Connect a guard column to an analytical column.
- Repair a broken column.
- Connect a column outlet to a transfer line.
- Deactivated Press-Tight® connectors assure better recovery of polar and non-polar compounds.
- Siltek® treated connectors are ideal for organochlorine pesticides analysis.
- Fit column ODs from 0.33–0.74mm (Restek 0.1mm–0.53mm ID).

| Description                                       | 5-pk. | 25-pk. | 100-pk. |
|---|-------|--------|---------|
| Universal Press-Tight® Connectors                 | 20400 | 20401  | 20402   |
| Deactivated, Universal Press-Tight® Connectors    | 20429 | 20430  | 20431   |
| Siltek® Treated Universal Press-Tight® Connectors | 20480 | 20449  | 20481   |

**Universal Angled Press-Tight® Connectors**

- Ideal for connecting a guard column to an analytical column.
- Made from inert fused silica.
- Angle approximates the curvature of a capillary column, reduces strain on column-end connections.
- Deactivated Press-Tight® connectors assure better recovery of polar and non-polar compounds.
- Siltek® treated connectors are ideal for organochlorine pesticides analysis.
- Fit column ODs from 0.33–0.74mm (Restek 0.1mm–0.53mm ID).

| Description  | 5-pk.     | 25-pk.    | 100-pk.   |
|--|-----------|-----------|-----------|
| Universal Angled Press-Tight® Connectors                 | 20446     | 20447     | 20448     |
| Deactivated Universal Angled Press-Tight® Connectors     | 20446-261 | 20447-261 | 20448-261 |
| Siltek® Treated Universal Angled Press-Tight® Connectors | 20482     | 20483     | 20484     |

**Universal “Y” Press-Tight® Connectors**

An alternative method of performing dual-column confirmational analyses!

- Split sample flow onto two columns.
- Split a single column flow to two detectors—perform confirmation analysis with a single injection.
- Deactivated Press-Tight® connectors assure better recovery of polar and non-polar compounds.
- Siltek® treated connectors are ideal for organochlorine pesticides analysis.
- Fit column ODs from 0.33–0.74mm (Restek 0.1mm–0.53mm ID).

| Description  | ea.       | 3-pk.     |
|--|-----------|-----------|
| Universal “Y” Press-Tight® Connector                 | 20405     | 20406     |
| Deactivated Universal “Y” Press-Tight® Connector     | 20405-261 | 20406-261 |
| Siltek® Treated Universal “Y” Press-Tight® Connector | 20485     | 20486     |

**Universal Angled “Y” Press-Tight® Connectors**

- Perform confirmation analysis with a single injection.
- Made from inert fused silica.
- Inlet and outlet ends conform to the column curvature—alleviates column-end connection strain.
- Deactivated Press-Tight® connectors assure better recovery of polar and non-polar compounds.
- Siltek® treated connectors are ideal for organochlorine pesticides analysis.
- Fit column ODs from 0.33–0.74mm (Restek 0.1mm–0.53mm ID).

| Description   | ea.       | 3-pk.     |
|---|-----------|-----------|
| Universal Angled “Y” Press-Tight® Connector                 | 20403     | 20404     |
| Deactivated Universal Angled “Y” Press-Tight® Connector     | 20403-261 | 20404-261 |
| Siltek® Treated Universal Angled “Y” Press-Tight® Connector | 20487     | 20469     |

**Universal “X” Press-Tight® Connectors**

- Connect a column to three detectors.
- Connect a column to two detectors and a sniffer port.
- Split sample flow onto three columns.
- Deactivated Press-Tight® connectors assure better recovery of polar and non-polar compounds.
- Fit column ODs from 0.33–0.74mm (Restek 0.1mm–0.53mm ID).

| Description  | ea.       | 3-pk.     |
|--|-----------|-----------|
| Universal “X” Press-Tight® Connector                 | 20407     | 20408     |
| Deactivated Universal “X” Press-Tight® Connector     | 20407-261 | 20408-261 |
| Siltek® Treated Universal “X” Press-Tight® Connector | 20407-266 | 20408-266 |

**Polyimide Resin**

- Permanently connects a Press-Tight® connector to a fused silica column.

| Description     | Max. Temp. | qty.    | cat.# |
|-----------------|------------|---------|-------|
| Polyimide Resin | 350°C      | 5 grams | 20445 |



## Connectors



Patent pending.

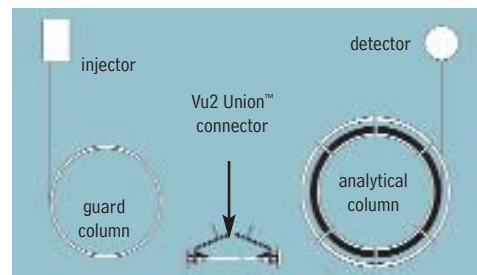
Secure, reliable  
column-to-column  
connections!

### 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.

Restek's Vu2 Union™ connector combines the simplicity of a Press-Tight® union with the strength of a metal union. The Vu2 Union™ connector reliably couples one analytical column to another, or to a transfer line or guard column. The columns cannot unexpectedly disconnect, even at temperatures as high as 400°C.

A guard column connected to an analytical column by a Vu2 Union™ connector.



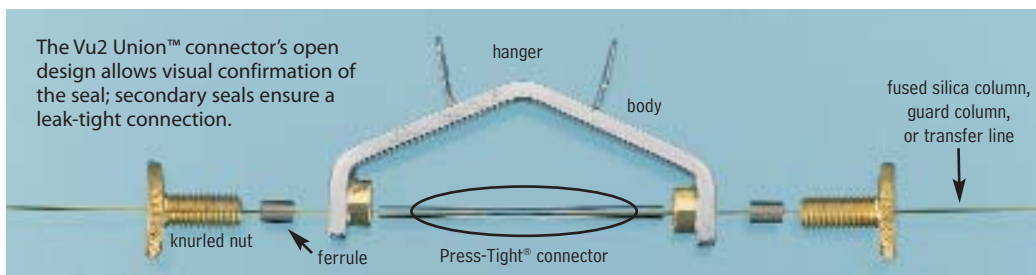
### How does a Vu2 Union™ connector work?

A Press-Tight® union in the Vu2 Union™ connector joins the fused silica 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 a leak-tight seal with the column end. 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.

NOTE: Not recommended for GC column-to-MS connections—use the Vacuum Vu-Union® (see our general catalog or our website).



Kits include: Vu2 Union™ body, 2 knurled nuts, 2 Press-Tight® unions, and 4 ferrules

| Description              | Ferrules Fit Column ID | qty.  | cat.# |
|--------------------------|------------------------|-------|-------|
| Vu2 Union™ Connector Kit | 0.10/0.15mm            | kit   | 22220 |
| Vu2 Union™ Connector Kit | 0.18/0.28mm            | kit   | 21105 |
| Vu2 Union™ Connector Kit | 0.32mm                 | kit   | 21106 |
| Vu2 Union™ Connector Kit | 0.45/0.53mm            | kit   | 21107 |
| Knurled nut              |                        | 2-pk. | 21108 |

### Universal Press-Tight® Connectors



| Description                                       | 5-pk. | 25-pk. | 100-pk. |
|---|-------|--------|---------|
| Universal Press-Tight® Connectors                 | 20400 | 20401  | 20402   |
| Deactivated, Universal Press-Tight® Connectors    | 20429 | 20430  | 20431   |
| Siltek® Treated Universal Press-Tight® Connectors | 20480 | 20449  | 20481   |

### Graphite Ferrules for Vu2 Union™ Connectors

- High-purity, high-density graphite.
- Stable to 450°C.
- No binders that can off-gas or adsorb analytes.
- Smooth surface and clean edges.



| Ferrule ID | Fits Column ID | Graphite 2-pk. | Graphite 10-pk. |
|------------|----------------|----------------|-----------------|
| 0.3mm      | 0.10/0.15mm    | 22221          | 22222           |
| 0.4mm      | 0.18/0.28mm    | 20280          | 20281           |
| 0.5mm      | 0.32mm         | 20282          | 20283           |
| 0.8mm      | 0.45/0.53mm    | 20284          | 20285           |

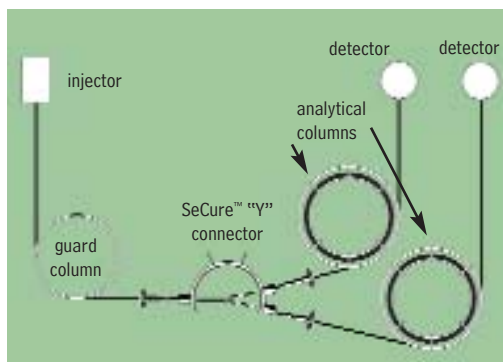
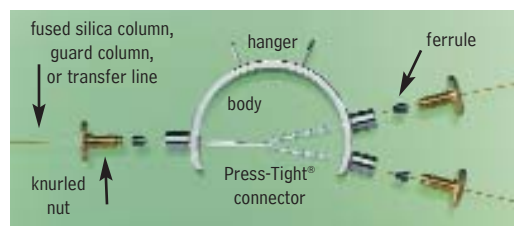
**SeCure™ “Y” Connector Kits**

- Connect two analytical columns to a transfer line or guard column.
- Use standard “Y” Press-Tight® connectors and 1/16" graphite ferrules.
- Reliable seal integrity, will not unexpectedly disconnect during temperature-programmed analyses.
- Open design allows visual confirmation of the seal for added confidence in the connection.

Combine the simplicity of a “Y” Press-Tight® connector with the strength of a metal union. The ferrules and knurled nuts hold the fused silica tubing in place, which prevents the tubing from unexpectedly disconnecting, even at temperatures as high as 400°C.

The SeCure™ “Y” Connector’s open design allows visual confirmation of the seal; secondary seals ensure a leak-tight connection.

Dual-column confirmational analysis with a single injection—one of the SeCure™ “Y” connector’s many uses.



Patent pending.

Secure, reliable  
column-to-column  
connections!

Kits include: SeCure™ “Y” connector body, 3 knurled nuts, “Y” Universal Press-Tight® union, 3 ferrules.

| Description               | Ferrules Fit Column ID | qty.  | cat.# |
|---------------------------|------------------------|-------|-------|
| SeCure™ “Y” Connector Kit | 0.25/0.28mm            | kit   | 20276 |
| SeCure™ “Y” Connector Kit | 0.32mm                 | kit   | 20277 |
| SeCure™ “Y” Connector Kit | 0.45/0.53mm            | kit   | 20278 |
| Knurled nut               |                        | 3-pk. | 20279 |

**a plus 1 story**

“Restek is a great corp. that keeps us operating on a daily basis with your GC supplies. We really love the new SeCure™ “Y” Connector. It has worked wonders for us.”

**Eric A. Lorge**, Project Manager,  
Major Equipment Manufacturer,  
Environmental Lab

**Universal “Y” Press-Tight® Connectors**

- Split sample flow onto two columns.
- Split a single column flow to two detectors—perform confirmation analysis with a single injection.
- Deactivated Press-Tight® connectors assure better recovery of polar and non-polar compounds.
- Siltek® treated connectors are ideal for organochlorine pesticides analysis.
- Fit column ODs from 0.33–0.74mm (Restek 0.1mm–0.53mm ID).

| Description  | ea.       | 3-pk.     |
|--|-----------|-----------|
| Universal “Y” Press-Tight® Connector                 | 20405     | 20406     |
| Deactivated Universal “Y” Press-Tight® Connector     | 20405-261 | 20406-261 |
| Siltek® Treated Universal “Y” Press-Tight® Connector | 20485     | 20486     |

**Graphite Ferrules for SeCure™ “Y” Connectors**

- Preconditioned to minimize out-gassing.
- High-purity, high-density graphite.
- Stable to 450°C.
- No binders that can off-gas or adsorb analytes.
- Smooth surface and clean edges.

| Ferrule ID | Fits Column ID   | Graphite 10-pk. | Graphite 50-pk. |
|------------|------------------|-----------------|-----------------|
| 0.4mm      | 0.18/0.25/0.28mm | 20200           | 20227           |
| 0.5mm      | 0.32mm           | 20201           | 20228           |
| 0.8mm      | 0.45/0.53mm      | 20202           | 20224           |



## please note

Use for fused silica-to-fused silica or fused silica-to-metal connections.

**MXT™ Low-Dead-Volume Connector Kits for Metal Columns are also available.**

See our general catalog or our website.

### MXT™-Union Connector Kits for Fused Silica Columns

- Low-dead-volume, leak-tight connection.
- Reusable.
- Siltek® treatment ensures maximum inertness.
- Ideal for connecting a guard column or transfer line to an analytical column.
- Use to oven temperatures of 350°C.
- Available in union and “Y” configurations.

These MXT™ connectors can be used with fused silica tubing, because of a Valcon polyimide 1/32-inch one-piece fused silica adaptor. This unique graphite-reinforced composite allows a capillary column to slide into the adaptor and be locked in place simply by loosening and tightening the fitting.



### MXT™-Union Connector Kits for Fused Silica Columns

Each kit contains the MXT™ union, two 1/32-inch nuts and two one-piece fused silica adaptors.

| Description                        | qty. | cat.# |
|------------------------------------|------|-------|
| For 0.25mm ID Fused Silica Columns | kit  | 21386 |
| For 0.32mm ID Fused Silica Columns | kit  | 21385 |
| For 0.53mm ID Fused Silica Columns | kit  | 21384 |



### MXT™ “Y”-Union Connector Kits for Fused Silica Columns

Each kit contains the MXT™ union, three 1/32-inch nuts and three one-piece fused silica adaptors.

| Description                        | qty. | cat.# |
|------------------------------------|------|-------|
| For 0.25mm ID Fused Silica Columns | kit  | 21389 |
| For 0.32mm ID Fused Silica Columns | kit  | 21388 |
| For 0.53mm ID Fused Silica Columns | kit  | 21387 |



### 1/32-Inch Replacement Nut

| Description           | qty.  | cat.# |
|-----------------------|-------|-------|
| 1/32" Replacement Nut | 5-pk. | 20389 |

### Valco® Connectors—One-Piece Valcon Polyimide Adaptor Ferrule for Fused Silica

We recommend a one-piece adaptor ferrule for use in fittings in which the ferrule will not be removed. Connections are made or broken by tightening or loosening the fitting nut and sliding the tubing in or out. Fused silica adaptor ferrules are Valcon polyimide, a unique graphite-reinforced composite, specially prepared to maximize mechanical stability at temperatures to 350°C. The determining factor for selecting adaptor ferrule size is the fused silica tubing OD.



### 1/32-Inch Adaptor Ferrule (Valcon Polyimide)

| Tubing OD             | Tubing ID | Valco® # | qty.  | cat.# |
|-----------------------|-----------|----------|-------|-------|
| 0.25 ≤ 0.40mm         | 0.25mm    | FS.4-5   | 5-pk. | 20137 |
| 0.40 ≤ 0.50mm         | 0.32mm    | FS.5-5   | 5-pk. | 20140 |
| 0.50 ≤ 0.80mm         | 0.53mm    | ZF.5V-5  | 5-pk. | 20141 |
| 1/32" Replacement Nut |           |          | 5-pk. | 20389 |



### 1/4-Inch–3/16-Inch Open-End Wrenches

High-quality miniature wrenches to use with MXT™ low-dead-volume connectors.

| Description                  | qty.        | cat.# |
|------------------------------|-------------|-------|
| 1/4"-3/16" Open-End Wrenches | 2-piece set | 20388 |

## tech tip

### Coupling GC Columns

An MXT™ connector is a good alternative to a glass connector when coupling GC columns. This connector is constructed from stainless steel and will not break; it uses ferrules for sealing. The design ensures low dead volume, and Siltek® treatment ensures the MXT™ connector is inert—both features help minimize peak tailing. MXT™ connectors can be used to connect metal to metal, metal to fused silica, or fused silica to fused silica tubing. When connecting metal tubing, use 1/32-inch stainless steel ferrules (see our general catalog or visit [www.restek.com](http://www.restek.com)); for fused silica tubing, use Valcon polyimide adaptor ferrules (see above).

**Thermal Gas Purifier\***

- Removes oxygen, water, carbon monoxide, carbon dioxide, hydrocarbons (except methane) to ppb levels—pure enough for MS.
- Packed with reactor-grade, pure getter material for maximum efficiency and no contamination.
- Welded end-fittings on getter tubes eliminate leaks.
- Each tube has 12L oxygen and 35L water vapor capacity.
- Maximum flow: 1 liter/minute.

The getter material in Restek’s re-engineered line of thermal gas purifiers reacts chemically with impurities in the carrier gas stream. Because the reaction is non-reversible, there is no possibility of contaminants breaking through the thermal gas purifier.

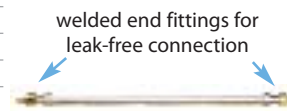
Gas purification is very economical when you use a thermal gas purifier. Getter tubes normally require changing only once per year; heavy use or very impure feed gas may require more frequent getter tube replacement.



**Single-Tube Model**



**Dual-Tube Model**



welded end fittings for leak-free connection

Dimensions: 13" x 1/2"  
(33 x 1.3 cm)

| Restek Single-Tube Thermal Gas Purifier, 110 Volt (1 tube included)** | qty. | cat.# |
|---|------|-------|
| 1/8" Fittings   | ea.  | 21496 |
| 1/4" Fittings   | ea.  | 21497 |
| Restek Dual-Tube Thermal Gas Purifier, 110 Volt (2 tubes included)**  | qty. | cat.# |
| 1/8" Fittings   | ea.  | 21498 |
| 1/4" Fittings   | ea.  | 21499 |
| Replacement Getter Tube   | qty. | cat.# |
| 1/8" Fittings (Similar to Supelco part# 2-2396)                       | ea.  | 21661 |
| 1/4" Fittings (Similar to Supelco part# 2-2398)                       | ea.  | 21660 |

\*Use with helium or nitrogen carrier gas only. Do not use with hydrogen, oxygen, or air—a violent reaction and/or fire will occur.  
\*\*Single-tube model dimensions: 15" x 7" x 6" (38 x 17.8 x 15.2 cm). Dual-tube model dimensions: 15" x 10" x 6" (38 x 25.4 x 15.2 cm).

**Pressure Gauge Kit**

- Use an in-line pressure gauge to indicate when the Thermal Gas Purifier getter tube should be replaced.
- Includes 1/8" tee and 0–100 psi gauge.



Always know the status of the Thermal Gas Purifier getter tube: change tube when pressure drops below 10psi.

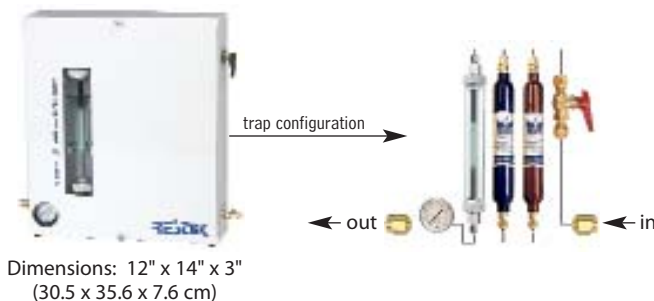
| Description  | qty. | cat.# |
|--|------|-------|
| In-line Pressure Gauge Kit for Thermal Gas Purifiers | kit  | 21657 |

**Restek Gas Management System**

- Removes moisture, hydrocarbons, and oxygen from carrier gas, extending column lifetime.
- Produces high-purity carrier gas for most applications.
- Includes one each: moisture, hydrocarbon, and indicating oxygen trap.
- Replacing traps is safe and easy.
- Maximum flow: 1 liter/minute.

did you know?

The Restek Gas Management System removes water vapor (to 10ppb), hydrocarbons (to 0.1ppm), and oxygen (to less than 0.1ppm) with three traps housed in one unit.



| Description   | qty. | cat.# |
|---|------|-------|
| Restek Gas Management System (includes fittings for 1/8" and 1/4" gas line) | ea.  | 21999 |
| Replacement Traps   | qty. | cat.# |
| High-Capacity Moisture Trap, 1/8" Fittings                                  | ea.  | 21997 |
| Capillary-Grade Hydrocarbon Trap, 1/8" Fittings                             | ea.  | 21991 |
| Indicating Oxygen Trap, 1/8" Fittings                                       | ea.  | 22010 |



did you know?

All Super-Clean™ filter cartridges (except hydrocarbon filter cat.# 22030) feature easy-to-read indicators. The indicator code is shown on every trap so there is no confusion about when to replace it.

tech tip

Oxygen and Moisture Traps

We highly recommend oxygen and moisture traps for make-up gas when operating sensitive detectors such as electron capture detectors (ECD). The hydrogen reaction gas for sensitive electrolytic conductivity detectors (ELCD) also requires a hydrocarbon trap, to remove trace impurities.

Super-Clean™ Gas Filters

- High-purity output ensures 99.9999% pure gas.
- “Quick connect” fittings for easy, leak-tight cartridge changes.
- Glass inside to prevent diffusion; plastic outside for safety.

Designed for fast, simple cartridge changing

Cartridge systems make changing gas filters quick and easy, and Super-Clean™ gas filters are the latest in cartridge-style gas filtration. A baseplate allows cartridges to be exchanged without introducing oxygen. Spring-loaded check valves seal when a filter is removed and open only when a new filter has been locked in place. There is no longer a need for loosening and tightening fittings every time a trap is changed, and your system will not become contaminated during the process.

With available 2- or 3-position baseplates, you can purify all GC gas streams at one location. Figure 1 shows some possible filter cartridge combinations using these baseplates. Any combination is possible because any Restek Super-Clean™ filter cartridge can be used with any Restek baseplate.

High-purity output for improved sensitivity (Table I)

The Triple Filter cartridge (cat.# 22020) is ideal for purifying carrier gas. This trap contains oxygen, moisture, and hydrocarbon scrubbers in one cartridge. The purity of your carrier gas after flowing through the Triple Filter is better than six-9s (99.9999% pure), which is ideal for sensitive mass spectrometry (MS) or ECD analyses, and for protecting your analytical columns against damage from contaminated carrier gas.

The Fuel Gas Filter cartridge (cat.# 22022) is perfect for purifying flame ionization detector (FID) fuel gases, removing both moisture and hydrocarbons. Using the Fuel Gas Filter for FID hydrogen and air will produce a stable baseline, improving overall reproducibility and sensitivity.

Figure 1 Filter cartridges can be configured for different applications.

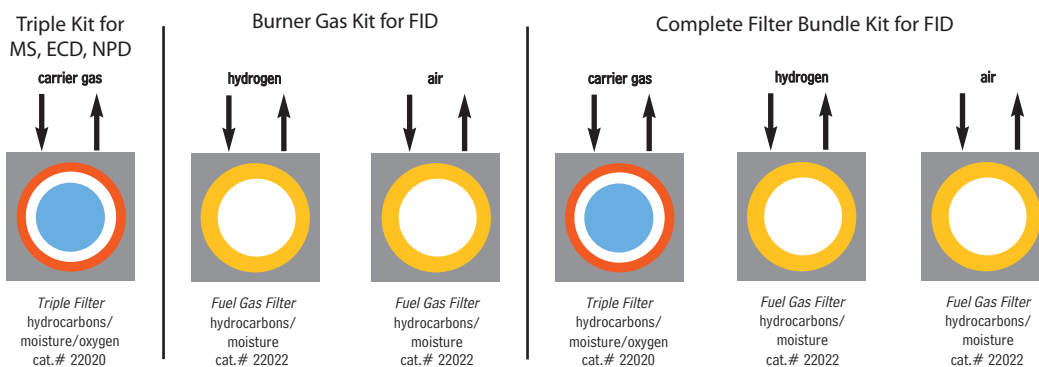


Table I Each Super-Clean™ filter provides high-purity outlet gas.

| Type of Filter                           | Outlet Gas Quality (%) | Maximum Pressure/Maximum Flow Rates | Use for:                             | Indicator Color Change           | Capacity             |                     |                  | Estimated Lifetime (years) |
|--|------------------------|-------------------------------------|--------------------------------------|----------------------------------|----------------------|---------------------|------------------|----------------------------|
|  |                        |                                     |                                      |                                  | H <sub>2</sub> O (g) | O <sub>2</sub> (mL) | Hydrocarbons (g) |                            |
| Moisture cat.# 22028                     | >99.9999               | 11 bar<br>159psi/<br>7 L/min.       | Inert carrier gas<br>Air<br>Hydrogen | Yellow to clear                  | 7.2                  | —                   | —                | >2                         |
| Oxygen cat.# 22029                       | >99.9999               | 11 bar<br>159psi/<br>7 L/min.       | Inert carrier gas                    | Green to grey                    | NA                   | 1000                | —                | >2                         |
| Hydrocarbons cat.# 22030                 | >99.9999               | 11 bar<br>159psi/<br>7L/min.        | Inert carrier gas<br>Air<br>Hydrogen | No indicator                     | NA                   | —                   | 12 <sup>3</sup>  | >2                         |
| Fuel Gas <sup>1</sup> cat.# 22022        | >99.9999               | 11 bar<br>159psi/<br>7L/min.        | Inert carrier gas<br>Air<br>Hydrogen | Yellow to clear                  | 3.5                  | —                   | 24 <sup>3</sup>  | >1.5                       |
| Triple <sup>2</sup> cat.# 22020          | >99.9999               | 11 bar<br>159psi/<br>7L/min.        | Inert carrier gas                    | Yellow to clear<br>Green to grey | 1.8                  | 500                 | 4 <sup>3</sup>   | >1                         |
| Helium Specific <sup>2</sup> cat.# 21982 | >99.9999               | 11 bar<br>159psi/<br>7L/min.        | Helium                               | Yellow to clear<br>Green to grey | 1.8                  | 500                 | —                | >1                         |

<sup>1</sup>Removes hydrocarbons, moisture.

<sup>2</sup>Removes hydrocarbons, moisture, oxygen.

<sup>3</sup>As *n*-butane.

### Super-Clean™ Filter and Baseplate Kits

| Description   | qty. | cat.# |
|---|------|-------|
| Carrier Gas Cleaning Kit (includes mounting baseplate, 1/8" inlet/outlet fittings, and oxygen/moisture/hydrocarbon Triple Filter) | kit  | 22019 |
| Fuel Gas Purification Kit (includes mounting baseplate, 1/8" inlet/outlet fittings, and hydrocarbon/moisture Fuel Gas Filter)     | kit  | 22021 |



All traps measure: 10<sup>3</sup>/<sub>8</sub>" x 1<sup>3</sup>/<sub>4</sub>"  
(27 x 4.4 cm)  
Each baseplate unit measures:  
4" x 4" x 1<sup>7</sup>/<sub>8</sub>"  
(10.2 x 10.2 x 4.8 cm)

### Replacement Filters

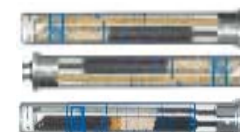
| Description   | qty. | cat.# |
|---|------|-------|
| Replacement Triple Filter (removes oxygen, moisture and hydrocarbons) | ea.  | 22020 |
| Replacement Fuel Gas Filter (removes moisture and hydrocarbons)       | ea.  | 22022 |



### Filter Bundle Kit

- Kit includes two Fuel Gas Filters for FID fuel gases and one Triple Filter for carrier gas.

| Description       | qty. | cat.# |
|-------------------|------|-------|
| Filter Bundle Kit | kit  | 22031 |



### Super-Clean™ Ultra-High Capacity Filters

| Description                            | qty. | cat.# |
|--|------|-------|
| Ultra-High Capacity Hydrocarbon Filter | ea.  | 22030 |
| Ultra-High Capacity Moisture Filter    | ea.  | 22028 |
| Ultra-High Capacity Oxygen Filter      | ea.  | 22029 |



### Helium-Specific Super-Clean™ Filter and Kit

- Specifically designed for purification of helium in GC/MS systems.
- Traps are packed and conditioned using helium.
- Uses standard single-position baseplate.

| Description  | qty. | cat.# |
|--|------|-------|
| Helium-Specific Carrier Gas Cleaning Kit (includes mounting baseplate, 1/8" inlet/outlet fittings, and oxygen/moisture/hydrocarbon Helium-Specific Filter) | kit  | 21983 |
| Replacement Helium-Specific Filter (removes oxygen, moisture and hydrocarbons)   | ea.  | 21982 |



### Baseplates

- Standard baseplate fittings are 1/8". To adapt to 1/4", order 1/8" to 1/4" tube-end unions (cat. # 21833, below).

| Description               | qty. | cat.# |
|---------------------------|------|-------|
| Single-Position Baseplate | ea.  | 22025 |
| 2-Position Baseplate      | ea.  | 22026 |
| 3-Position Baseplate      | ea.  | 22027 |



### Wall Mounting Bracket

- Baseplates can be mounted by using screws and the mounting holes on the baseplate, or by using this optional wall mounting bracket.

| Description                                       | qty. | cat.# |
|---|------|-------|
| Wall Mounting Bracket for Super-Clean™ Baseplates | ea.  | 21984 |



### Replacement O-Rings for Cartridge Baseplates

- Pack includes 10 large O-rings and 10 small O-rings.

| Description                                  | qty.   | cat.# |
|--|--------|-------|
| Replacement O-Rings for Cartridge Baseplates | 20-pk. | 22023 |



### 1/8-Inch to 1/4-Inch Tube-End Unions

- To adapt 1/8" Super-Clean™ baseplate fittings to 1/4", use 1/8" to 1/4" tube-end unions.

| Description                  | qty.  | cat.# |
|------------------------------|-------|-------|
| 1/8" to 1/4" Tube-End Unions | 5-pk. | 21833 |



## Super-Clean™ Click-On Traps



**Kelli Steindl**  
GC Accessories Associate  
Product Marketing  
Manager  
2+ years of service!

### Click-On Inline Super-Clean™ Traps

- High-purity output ensures 99.9999% pure gas.
- Click-On fittings for easy, leak-tight cartridge changes; brass or stainless steel, 1/4" or 1/8".
- Helium-Specific Triple Trap is ideal for GC/MS.

Using the same features and benefits as the Super-Clean™ base-plates and filters (page 39), Click-On adaptor connectors allow cartridges to be exchanged without introducing oxygen. Spring-loaded check valves seal when a filter is removed and open only when a new filter has been locked in place. There is no need for loosening and tightening fittings every time a trap is changed, and your system will not become contaminated during the process.

The Triple Trap is ideal for purifying carrier gas—it contains oxygen, moisture, and hydrocarbon scrubbers in one cartridge.

The Fuel Gas Trap is ideal for purifying flame ionization detector (FID) fuel gases, removing both moisture and hydrocarbons.

The Helium-Specific Triple Trap is ideal for purifying helium in GC/MS systems. This trap is packed and purged under helium and contains oxygen, moisture, and hydrocarbon scrubbers in one cartridge.

Trap replacement depends on the quality of the incoming gas. Use the double connector and install an indicating cartridge after a trap to indicate when the trap should be replaced.



| Filter Type                      | Gas Quality at Outlet | Maximum Pressure | Maximum Flow (L/min.) | Use For  | H <sub>2</sub> O (g) | Capacity O <sub>2</sub> (mL) | Hydrocarbons (g) | Estimated Lifetime (years) |
|----------------------------------|-----------------------|------------------|-----------------------|--|----------------------|------------------------------|------------------|----------------------------|
| Moisture cat.#22467              | >99.9999              | 11 bar<br>160psi | 25                    | Inert carrier gas, helium, air, H <sub>2</sub> | 21                   | NA                           | NA               | >3                         |
| Oxygen cat.#22468                | >99.9999              | 11 bar<br>160psi | 25                    | Inert carrier gas                              | NA                   | 3000                         | NA               | >3                         |
| Hydrocarbon cat.#22466           | >99.9999              | 11 bar<br>160psi | 25                    | Inert carrier gas, helium, air, H <sub>2</sub> | NA                   | NA                           | 36 <sup>3</sup>  | >3                         |
| Fuel Gas <sup>1</sup> cat.#22465 | >99.9999              | 11 bar<br>160psi | 25                    | Inert carrier gas, helium, air, H <sub>2</sub> | 10                   | NA                           | 18 <sup>3</sup>  | >2                         |
| Triple <sup>2</sup> cat.#22464   | >99.9999              | 11 bar<br>160psi | 25                    | Inert carrier gas                              | 6                    | 1000                         | 12 <sup>3</sup>  | >2                         |

<sup>1</sup>Removes hydrocarbons, moisture.

<sup>2</sup>Removes hydrocarbons, moisture, oxygen.

<sup>3</sup>As *n*-butane.

NOTE: Super-Clean™ Gas Filters are recommended for purifying non corrosive gases with low concentrations of contaminants. The maximum concentration of oxygen in the incoming gas stream for oxygen purifiers is 0.5%.

### Click-On Inline Super-Clean™ Traps and Connector Kits

| Description  | qty. | cat.# |
|--|------|-------|
| Carrier Gas Purification Kit, 1/8" Stainless Steel                                 |      |       |
| Includes (2) 1/8" SS connectors and (1) oxygen/moisture/hydrocarbon triple trap    | kit  | 22456 |
| Carrier Gas Purification Kit, 1/8" Brass   |      |       |
| Includes (2) 1/8" brass connectors and (1) oxygen/moisture/hydrocarbon triple trap | kit  | 22457 |
| Carrier Gas Purification Kit, 1/4" Stainless Steel                                 |      |       |
| Includes (2) 1/4" SS connectors and (1) oxygen/moisture/hydrocarbon triple trap    | kit  | 22458 |
| Carrier Gas Purification Kit, 1/4" Brass   |      |       |
| Includes (2) 1/4" brass connectors and (1) oxygen/moisture/hydrocarbon triple trap | kit  | 22459 |
| Fuel Gas Purification Kit, 1/8" Stainless Steel                                    |      |       |
| Includes (4) 1/8" SS connectors and (2) hydrocarbon/moisture traps                 | kit  | 22460 |
| Fuel Gas Purification Kit, 1/8" Brass  |      |       |
| Includes (4) 1/8" brass connectors and (2) hydrocarbon/moisture traps              | kit  | 22461 |
| Fuel Gas Purification Kit, 1/4" Stainless Steel                                    |      |       |
| Includes (4) 1/4" SS connectors and (2) hydrocarbon/moisture traps                 | kit  | 22462 |
| Fuel Gas Purification Kit, 1/4" Brass  |      |       |
| Includes (4) 1/4" brass connectors and (2) hydrocarbon/moisture traps              | kit  | 22463 |



### Click-On Inline Super-Clean™ Replacement Traps

| Description  | qty. | cat.# |
|--|------|-------|
| Click-On Super-Clean™ Replacement Triple Trap<br>(removes oxygen, moisture and hydrocarbons) | ea.  | 22464 |
| Click-On Super-Clean™ Replacement Fuel Gas Trap<br>(removes moisture and hydrocarbons)       | ea.  | 22465 |



### Click-On Inline Super-Clean™ Ultra-High Capacity Traps

| Description                          | qty. | cat.# |
|--------------------------------------|------|-------|
| Ultra-High Capacity Hydrocarbon Trap | ea.  | 22466 |
| Ultra-High Capacity Moisture Trap    | ea.  | 22467 |
| Ultra-High Capacity Oxygen Trap      | ea.  | 22468 |



### Helium-Specific Click-On Inline Super-Clean™ Trap and Connector Kits

| Description   | qty. | cat.# |
|---|------|-------|
| <b>Kits</b>   |      |       |
| Helium-Specific Carrier Gas Cleaning Kit, 1/8" Stainless Steel<br>Includes (2) 1/8" SS connectors and (1) oxygen/moisture/hydrocarbon helium-specific triple trap | kit  | 22469 |
| Helium-Specific Carrier Gas Cleaning Kit, 1/8" Brass<br>Includes (2) 1/8" brass connectors and (1) oxygen/moisture/hydrocarbon helium-specific triple trap        | kit  | 22470 |
| Helium-Specific Carrier Gas Cleaning Kit, 1/4" Stainless Steel<br>Includes (2) 1/4" SS connectors and (1) oxygen/moisture/hydrocarbon helium-specific triple trap | kit  | 22471 |
| Helium-Specific Carrier Gas Cleaning Kit, 1/4" Brass<br>Includes (2) 1/4" brass connectors and (1) oxygen/moisture/hydrocarbon helium-specific triple trap        | kit  | 22472 |
| <b>Replacement Trap</b>   |      |       |
| Helium-Specific Replacement Triple Trap<br>(removes oxygen, moisture and hydrocarbons)  | ea.  | 22473 |

### did you know?

Helium-Specific Click-On Inline Super-Clean™ Trap and Kits are designed specifically for purification of helium in GC/MS systems!



### Click-On Inline Super-Clean™ Indicator

- Oxygen: Green to Grey
- Moisture: Beige to Clear

| Description  | qty. | cat.# |
|--|------|-------|
| Click-On Inline Super-Clean™ Indicator<br>(oxygen, moisture) | ea.  | 22474 |

### tech tip

Install an indicator after the Click-On inline filter so there is no confusion about when to replace the traps.



### Click-On Inline Super-Clean™ Connectors

- Click-On connectors allow you to change traps quickly, without introducing oxygen into your system.

| Description  | qty.  | cat.# |
|--|-------|-------|
| 1/8" Brass Click-On Inline Super-Clean™ Connectors           | 2-pk. | 22475 |
| 1/8" Stainless Steel Click-On Inline Super-Clean™ Connectors | 2-pk. | 22476 |
| 1/4" Brass Click-On Inline Super-Clean™ Connectors           | 2-pk. | 22477 |
| 1/4" Stainless Steel Click-On Inline Super-Clean™ Connectors | 2-pk. | 22478 |



### Click-On Inline Super-Clean™ Double Connector

- Connects any Click-On trap to a Click-On indicator.

| Description  | qty. | cat.# |
|--|------|-------|
| Click-On Inline Super-Clean™ Double Connector, stainless steel | ea.  | 22479 |



### Wall-Mounting Clamps for Click-On Inline Super-Clean™ Traps

| Description   | qty.  | cat.# |
|---|-------|-------|
| Wall-Mounting Clamps for Click-On Inline Super-Clean™ Traps | 4-pk. | 22480 |



### Replacement O-Rings for Click-On Inline Super-Clean™ Connectors

- Pack includes 10 large O-rings and 10 Small O-rings.

| Description   | qty.   | cat.# |
|---|--------|-------|
| Replacement O-Rings for Click-On Inline Super-Clean™ Connectors | 20-pk. | 22481 |





**Dual-Stage Ultra-High-Purity Brass Regulators**

- Oxidation-resistant, chrome-plated.
- Most stable outlet pressure control throughout the life of a high-pressure gas cylinder.
- Secondary pressure regulation not needed.
- Less internal volume than stainless steel regulators.

Outlet pressure: 0 to 100psig  
 Outlet gauge: 30" – 0 to 200psig  
 Inlet gauge: 0 to 4000psig  
 Outlet assembly: diaphragm valve, 1/4" tube fitting

| Fitting                                    | qty. | cat.# |
|--|------|-------|
| CGA 580 (N <sub>2</sub> , He, Ar)          | ea.  | 21667 |
| CGA 350 (H <sub>2</sub> , P <sub>2</sub> ) | ea.  | 21668 |
| CGA 590 (Air)                              | ea.  | 21669 |



**Single-Stage Ultra-High-Purity Brass Regulators**

- Oxidation-resistant, chrome-plated.
- Use when there is secondary pressure regulation downstream.
- Identical gas purity protection as with our dual-stage regulators.

Outlet pressure: 0 to 100psig  
 Outlet gauge: 30" – 0 to 200psig  
 Inlet gauge: 0 to 4000psig  
 Outlet assembly: diaphragm valve, 1/4" tube fitting

| Fitting                                    | qty. | cat.# |
|--|------|-------|
| CGA 580 (N <sub>2</sub> , He, Ar)          | ea.  | 20646 |
| CGA 350 (H <sub>2</sub> , P <sub>2</sub> ) | ea.  | 20647 |
| CGA 590 (Air)                              | ea.  | 20648 |



**Model FID-1000 and FID-2500 Gas Stations**

- Single unit produces UHP zero air from house compressed air and 99.9995% pure hydrogen from deionized water.
- Ideal for supplying up to 5 - 6 FIDs.
- Eliminates inconvenient and dangerous cylinders.
- Silent operation, minimal operator attention required.

**Specifications**

|                           |   |
|---------------------------|---|
| Hydrogen Purity:          | 99.9995%  |
| Zero Air Purity:          | FID-1000:<br>< 0.1ppm total hydrocarbons as methane<br>FID-2500:<br>< 0.05ppm total hydrocarbons as methane |
| Max. Hydrogen Flow Rate:  | FID-1000: 90cc/min.<br>FID-2500: 250cc/min.   |
| Max. Zero Air Flow Rate:  | FID-1000: 1000cc/min.<br>FID-2500: 2500cc/min.  |
| Power:                    | 120VAC/amp, 60Hz, 400 watts   |
| Hydrogen Outlet Pressure: | 60 psig   |
| Zero Air Outlet Pressure: | 40-125 psig*  |
| Inlet Connection:         | 1/4" NPT (female)   |
| Outlet:                   | 1/8" compression  |
| Dimensions:               | 16.5" h x 10.5" w x 17" d<br>(42cm x 27cm x 43cm)   |
| Weight:                   | 53 lbs. (24kg)  |

Parker Balston's Gas Stations provide both UHP grade hydrogen fuel gas and zero grade air for flame ionization detectors on gas chromatographs. The system is specifically designed to supply fuel gas to FIDs and to support flame thermionic and flame photometric detectors. The units produce zero air by purifying compressed air to a total hydrocarbon concentration of 0.1ppm or less (measured as methane).

The hydrogen generators produce hydrogen gas from deionized water, using the principle of electrolytic dissociation of water and hydrogen proton conduction through a proton exchange membrane cell.

| Description                                       | qty. | cat.# |
|---|------|-------|
| Model FID-1000 Gas Station (ideal for 1 - 2 FIDs) | ea.  | 20177 |
| Model FID-2500 Gas Station (ideal for 5 - 6 FIDs) | ea.  | 24913 |

**Replacement Components for FID Gas Stations**

|   |     |       |
|---|-----|-------|
| Resin Bed Cartridge for Hydrogen Generators in FID-1000 and FID-2500 Gas Stations                           | ea. | 24914 |
| Replacement Desiccant Cartridge   | ea. | 21671 |
| FID Gas Station Maintenance Kit (Includes 1 desiccant cartridge, 1 resin bed cartridge, 1 filter cartridge) | ea. | 24915 |

\*Zero air inlet requires minimum of 40psig compressed air pressure.

**ordering note**

For international orders, please add the appropriate power cord suffix from the table below.

**free literature**

For more information, download a free copy of our *FID Gas Stations Fast Facts* from [www.restek.com](http://www.restek.com)!

lit. cat.# 580051

**International Power Cord Sets**

Just add the proper suffix to the catalog number for the gas generator you are ordering.

| Location                                | qty. | cat.# suffix |
|---|------|--------------|
| United Kingdom (230VAC, 50/50Hz)        | ea.  | -550         |
| European (230VAC, 50/60Hz)              | ea.  | -551         |
| IEC Connector Only (230VAC, 50/60Hz)    | ea.  | -552         |
| Japanese (200VAC, 50/60Hz)              | ea.  | -556         |
| Japanese for Zero Air (100VAC, 50/60Hz) | ea.  | -553         |
| Japanese for Hydrogen (100VAC, 50/60Hz) | ea.  | -554         |
| Japanese for Nitrogen (100VAC, 50/60Hz) | ea.  | -555         |

### Instrument-Grade Welded and Drawn 304 Grade Stainless Steel Tubing

Clean tubing is critical to the delivery of pure gas to your instrument. Restek's Stainless Steel Tubing is specially cleaned for inertness by using the procedure for processing our Silcosteel® and Siltek®-treated products, because scrupulously clean parts are a prerequisite for a quality coating.



| Tubing Dimensions |          | Length (per-foot pricing on 26 feet or more) |             |             |
|-------------------|----------|--|-------------|-------------|
|                   |          | 25 Feet                                      | 26–100 Feet | > 100 Feet* |
| ID (in.)          | OD (in.) | cat.#  | cat.#       | cat.#       |
| 0.01" ID          | 1/16" OD | 21500  | 21501       | 21502       |
| 0.02" ID          | 1/8" OD  | 21503  | 21504       | 21505       |
| 0.03" ID          | 1/16" OD | 21506  | 21507       | 21508       |
| 0.04" ID          | 1/16" OD | 21509  | 21510       | 21511       |
| 0.085" ID         | 1/8" OD  | 21512  | 21513       | 21514       |
| 0.21" ID          | 1/4" OD  | 21515  | 21516       | 21517       |

\*The availability of long lengths (continuous lengths up to 500 feet) is subject to inventory constraints. Please inquire before ordering.

### ordering note

Required length in meters  
x 3.2808 = length in feet.

### ordering note

An extra charge is applied for cutting and/or straightening stainless steel and/or copper tubing, calculated from the total number of pieces produced for each line item

### Cleaned Copper Tubing

- Adheres to ASTM B-280.
- Chromatographically free of background contamination.
- Use for plumbing GC systems.

| ID     | OD   | Wall   | qty.   | cat.# |
|--------|------|--------|--------|-------|
| 0.065" | 1/8" | 0.030" | 50 ft. | 21590 |
| 0.190" | 1/4" | 0.030" | 50 ft. | 21592 |

### cleaned

All tubing is cleaned and ready to use.

### GC Installation Kit

This kit contains the tubing and fittings needed to add an additional GC to your lab bench. Also included are four 1/8-inch tees, so carrier, fuel, and other GC gases can be routed to the new inlet or detector from existing gas lines. Order additional parts, such as purifiers or regulators, separately to customize the GC installation to your specifications. Kit includes: one tubing cutter, one 1/8-inch x 1/4-inch reamer, one 7/16-inch wrench, one 1/2-inch wrench, four 1/8-inch brass tees, ten 1/8-inch brass nuts, ten brass front and back ferrules, and 50 feet (15.2 meters) of our instrument-grade cleaned 1/8-inch copper tubing.



| Description         | qty. | cat.# |
|---------------------|------|-------|
| GC Installation Kit | kit  | 21325 |

### tech tip

#### Plumbing a GC

It is essential to use clean chromatographic-grade tubing to plumb a GC. Standard-grade tubing contains residual hydrocarbon contaminants from the drawing process. These contaminants migrate into the gas stream, elevating background noise and causing down time.

For the *ultimate*  
in inertness, use

**SILTEK®**  
tubing.

See our catalog or  
website.

## Tubing Tools



### 1/16-Inch Tubing Cutter

- Produces square, smooth cuts in 1/16-inch tubing.
- Eliminates tubing distortion.
- Replaceable cutting wheel.

| Description                | qty.  | cat.# |
|----------------------------|-------|-------|
| 1/16" Tubing Cutter        | ea.   | 20192 |
| Replacement Cutting Wheels | 3-pk. | 20185 |



### Ridgid™ Tubing Cutter

- Excellent for cutting 1/8- or 1/4-inch metal tubing.
- Compact size is ideal for tight spaces.
- Replaceable cutting wheel.

| Description   | qty.  | cat.# |
|---|-------|-------|
| Ridgid™ Tubing Cutter for 1/8" or 1/4" metal tubing | ea.   | 23011 |
| Replacement Cutting Wheels                          | 2-pk. | 23012 |



### Tubing Reamer

- Removes burrs from stainless steel tubing.
- For 1/4- or 1/8-inch tubing.
- Non-slip safety design.

| Description   | qty. | cat.# |
|---------------|------|-------|
| Tubing Reamer | ea.  | 20134 |



CE

8" x 6 1/4" x 4 1/4"  
(20.3 x 15.9 x 10.8 cm)  
Weight: 11 lbs. (5.0 kg)

### SSI TC-20 Tube Cutting Machine

- Cuts 1/16", 1/8", or 1/4" tubing with inside diameter as small as 0.008".
- Electrically operated bench-top model.
- Handy dressing tool on the swing arm removes burrs and reams tubing.
- Voltage selectable 110–120/220–240 volts, 50–60Hz.\*

| Description                    | qty.  | cat.# |
|--------------------------------|-------|-------|
| SSI Tubing Cutter Machine      | ea.   | 23029 |
| SSI Replacement Cutting Wheels | 3-pk. | 23030 |

\*Unit shipped set for 110–120 operating voltage. Switch to 220–240 volts by using alternate fuse and power cord (included).

### Tubing Dressing Tool

- Same tool as included with the SSI tube cutting machine.



| Description                                       | qty. | cat.# |
|---|------|-------|
| 1/16" Tubing Dressing Tool                        | ea.  | 20188 |
| Replacement Insert for 1/16" Tubing Dressing Tool | ea.  | 20189 |
| 1/8" Tubing Dressing Tool                         | ea.  | 20190 |
| Replacement Insert for 1/8" Tubing Dressing Tool  | ea.  | 20191 |



### Tubing Bender

- Bends 1/8-inch, 3/16-inch, or 1/4-inch tubing.
- Accurate left-hand, right-hand, or offset bends.

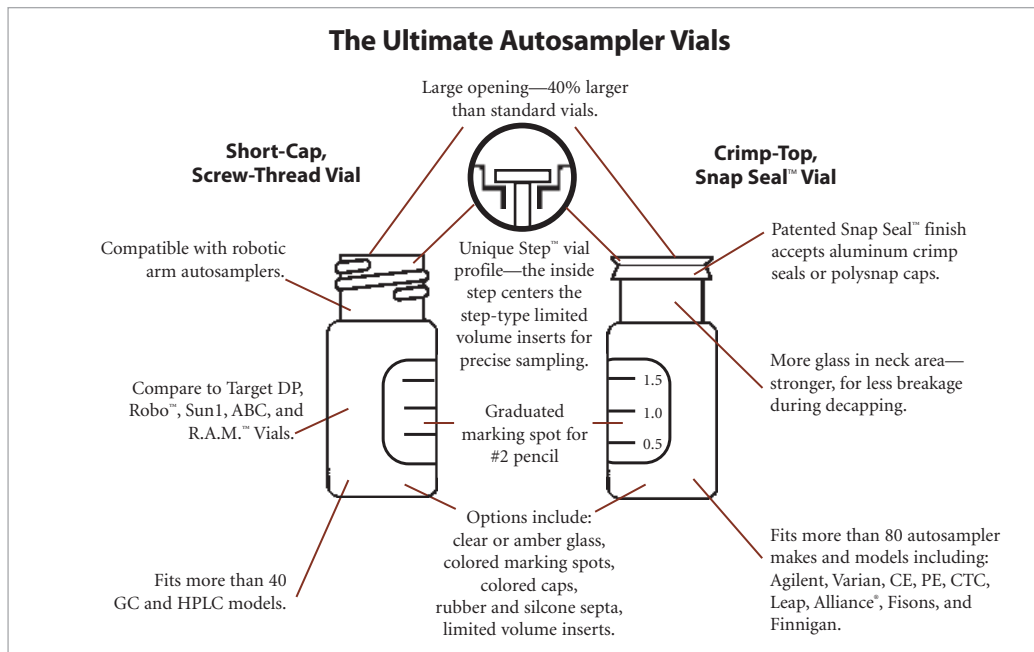
| Description   | qty. | cat.# |
|---------------|------|-------|
| Tubing Bender | ea.  | 23009 |



### 1/16-Inch Tubing Cutting Pliers

- Ideal for cutting 1/16-inch tubing.
- Cuts quickly, reducing distortion.
- Cuts clean, eliminating need for deburring.

| Description                 | qty. | cat.# |
|-----------------------------|------|-------|
| 1/16" Tubing Cutting Pliers | ea.  | 20193 |



### Snap Seal™ Vials: The Versatile Crimp Top Vial

- Purchase only one vial type, but use any crimp capping system.
- Seal securely with a standard aluminum crimp seal, a Poly Crimp™ Seal, or a variety of Snap-Top Cap™ designs.
- Crimp tightly—the neck finish provides a tighter seal when using the new Poly Crimp™ Seal, Snap-Top Cap™ or aluminum crimp seal.
- Seal tightly—the unique design seals securely using septum of proper thickness.
- 40% larger opening than standard crimp-top vials.
- Autosampler compatible—the unique Step™ vial design precisely centers a limited-volume insert in the vial neck. This ensures dependable, reliable use with autosamplers—even autosamplers with robotic arms.
- Less breakage—more glass in the neck area minimizes breakage during decapping.
- Bags of mixed color caps aid in coding special samples, controls, or standards.



### Catalog Number Cross-Reference: Vials for Agilent Autosamplers

| Similar to Agilent Part # | Restek Cat. # | Description  | Page |
|---------------------------|---------------|--|------|
| 5181-1210                 | 21174         | Aluminum Crimp Seals, PTFE/Rubber, 100-pk.           | 46   |
| 5181-1270                 | 24513         | 50µL Polypropylene Spring Inserts, 100-pk.           | 46   |
| 5181-3376                 | 24385         | 2mL Amber Crimp-Top Vials, 100-pk.                   | 46   |
| 5181-3377                 | 24517         | 350µL Glass Flat Bottom Inserts, 1000-pk.            | 46   |
| 5182-0543                 | 24383         | 2mL Clear Crimp-Top Vials, 100-pk.                   | 46   |
| 5182-0549                 | 24518         | 250µL Polypropylene Bottom Spring Inserts, 100-pk.   | 46   |
| 5182-0552                 | 24359         | Aluminum Crimp Seals, PTFE/Silicone, 100-pk.         | 46   |
| 5182-0714                 | 21154         | 2mL Clear Screw-Top Vials - No Marking Spot, 100-Pk. | 47   |
| 5182-0715                 | 21140         | 2mL Clear Screw-Top Vials, 100-pk.                   | 47   |
| 5182-0716                 | 21142         | 2mL Amber Screw-Top Vials, 100-pk.                   | 47   |
| 5182-0717                 | 24473         | 9mm Screw-Top Closures, PTFE/Rubber, 100-pk.         | 47   |
| 5182-0720                 | 24485         | 9mm Screw-Top Closures, PTFE/Silicone, 100-pk.       | 47   |
| 5182-0723                 | 24497         | 9mm Screw-Top Closures, PTFE/Silicone/PTFE, 100-pk.  | 47   |
| 5183-2068                 | 21141         | 2mL Clear Screw-Top Vials, 1000-pk.                  | 47   |
| 5183-2069                 | 21143         | 2mL Amber Screw-Top Vials, 1000-pk.                  | 47   |
| 5183-4492                 | 24384         | 2mL Clear Crimp-Top Vials, 1000-pk.                  | 46   |
| 5183-4493                 | 24386         | 2mL Amber Crimp-Top Vials, 1000-pk.                  | 46   |
| 5183-4498                 | 21175         | Aluminum Crimp Seals, PTFE/Rubber, 1000-pk.          | 46   |
| 5183-4500                 | 24360         | Aluminum Crimp Seals, PTFE/Silicone, 1000-pk.        | 46   |
| 9301-0978                 | 24651         | 100µL Polypropylene Limited Volume Vials, 100-pk.    | 46   |
| 9301-0977                 | 24653         | 100µL Glass/Plastic Limited Volume Vials, 100-pk.    | 46   |

[← cross-reference](#)

## 11 mm Vials



### Crimp-Top Vials, 2.0mL, 12 x 32mm, 11 mm Crimp Finish

#### Crimp-Top Vials, Snap Seal™ Style—12 x 32mm, 11mm Crimp

| Description   | 100-pk. | 1000-pk. |
|---|---------|----------|
| 2.0mL Clear Glass Vial w/White Graduated Marking Spot | 24383   | 24384    |
| 2.0mL Amber Glass Vial w/White Graduated Marking Spot | 24385   | 24386    |
| 2.0mL Clear Glass Vial without Graduated Marking Spot | 21152   | 21153    |



#### 11 mm Aluminum Crimp Seals with Septa

| Description                            | 100-pk. | 500-pk. | 1000-pk. |
|--|---------|---------|----------|
| Silver Seal, PTFE/Natural Rubber Septa | 21174   | —       | 21175    |
| Blue Seal, PTFE/Red Rubber Septa       | 24351   | —       | 24352    |
| Green Seal, PTFE/Red Rubber Septa      | 24353   | —       | 24354    |
| Red Seal, PTFE/Red Rubber Septa        | 24355   | —       | 24356    |
| Yellow Seal, PTFE/Red Rubber Septa     | 24357   | —       | 24358    |
| Mixed Colors, PTFE/Rubber Septa        | —       | 21724   | —        |
| Silver Seal, PTFE/Silicone Septa       | 24359   | —       | 24360    |
| Blue Seal, PTFE/Silicone Septa         | 24361   | —       | 24362    |
| Green Seal, PTFE/Silicone Septa        | 24363   | —       | 24364    |
| Red Seal, PTFE/Silicone Septa          | 24365   | —       | 24366    |
| Yellow Seal, PTFE/Silicone Septa       | 24367   | —       | 24368    |
| Mixed Colors, PTFE/Silicone Septa      | —       | 21725   | —        |
| Silver Seal, PTFE/Silicone/PTFE Septa  | 24369   | —       | 24370    |

for **more** info

see **page 48** for crimpers and decappers.



#### Convenience Kits: Vials, Caps, & Septa

Vials packaged in a clear-lid tray. Caps with septa packaged in a plastic bag.

| Description  | 100-pk. | 1000-pk. |
|--|---------|----------|
| 2.0mL Clear Vial, <b>deactivated</b> , PTFE/Natural Rubber Silver Seal | 24671   | 24672    |
| 2.0mL Amber Vial, <b>deactivated</b> , PTFE/Natural Rubber Silver Seal | 24673   | 24674    |
| 2.0mL Clear Vial, untreated, PTFE/Natural Rubber Silver Seal           | 21196   | 21197    |
| 2.0mL Amber Vial, untreated, PTFE/Natural Rubber Silver Seal           | 21198   | 21199    |
| 2.0mL Clear Vial, untreated, PTFE/Silicone Silver Seal                 | 24646   | 24647    |
| 2.0mL Amber Vial, untreated, PTFE/Silicone Silver Seal                 | 24648   | 24649    |



#### Limited Volume Inserts for 2mL Crimp-Top & Short-Cap, Screw-Thread Vials

| Description   | 100-pk. | 1000-pk. |
|---|---------|----------|
| 50µL Glass, Big Mouth, Bottom Spring                          | 24513   | 21782    |
| 250µL Glass, Big Mouth Insert w/ Bottom Spring                | 21776   | 21777    |
| 250µL Glass, Big Mouth Insert w/ Glass Flange (Step™ Design)* | 24516   | 21779    |
| 350µL Glass, Flat Bottom Insert                               | 21780   | 24517    |
| 350µL Glass, Flat Bottom Insert w/ ID Ring                    | 24692   | 24693    |
| 250µL Polypropylene, Big Mouth, Bottom Spring                 | 24518   | —        |
| 250µL Polypropylene, Big Mouth, Top Flange                    | 24519   | —        |
| 250µL Polypropylene, Big Mouth, No Spring                     | 24520   | —        |

\*Not to be used with 9mm screw-thread vials.



#### Limited Volume Vials, 11mm Crimp-Top

| Description                           | 100-pk. | 1000-pk. |
|---------------------------------------|---------|----------|
| 100µL Polypropylene                   | 24651   | 24652    |
| 100µL Glass Insert/Clear Plastic Vial | 24653   | —        |

### 9mm Short-Cap, Screw-Thread Vials, 12 x 32mm, 9mm Opening Fit all 2.0mL, 12 x 32mm, Crimp-Top Vial Based Autosamplers.

- Shorter screw cap allows the robotic autosampler to function properly.
- Wider opening prevents syringe problems.
- Dimensions are effectively identical to the crimp-top vial.
- Variety of colors and liner material.

Are you tired of dealing with crimp-top vials, but worried about using screw-thread vials with your autosampler? If you want the performance of a crimp-top vial with the convenience of a screw-thread vial, these vials are the answer for you.

Agilent Compatible!



### 9mm Short-Cap, Screw-Thread Vials, 12 x 32mm, 9mm Opening

| Description                                      | 100-pk. | 1000-pk. |
|--|---------|----------|
| 2.0mL Clear Vial, w/White Graduated Marking Spot | 21140   | 21141    |
| 2.0mL Amber Vial, w/White Graduated Marking Spot | 21142   | 21143    |
| 2.0mL Clear Vial, without Graduated Marking Spot | 21154   | 21155    |

### 9mm Thread Pre-Assembled Short-Cap, Screw-Vial Closures

| Description                                | 100-pk. | 500-pk. | 1000-pk. |
|--|---------|---------|----------|
| Blue Cap, PTFE/Red Rubber Liner            | 24473   | —       | 24474    |
| Mixed Colors, PTFE/Red Rubber Liner        | —       | 24668   | —        |
| Blue Cap, PTFE/Silicone Liner              | 24485   | —       | 24486    |
| Mixed Colors, PTFE/Silicone Liner          | —       | 24669   | —        |
| Blue Cap, PTFE/Silicone/PTFE Liner         | 24497   | —       | 24498    |
| Mixed Colors, PTFE/Silicone/PTFE Liner Cap | —       | 24670   | —        |

Ideal for Agilent 7673 & other autosamplers that process 12 x 32mm crimp-top vials.



Limited volume inserts are available on page 46.

## Headspace Vials

### Headspace Autosampler Vials

| Description                     | 100-pk. | 1000-pk. |
|---------------------------------|---------|----------|
| 6mL Clear Vial                  | 21166   | 21167    |
| 10mL Clear Vial, Flat Bottom    | 24683   | 24684    |
| 10mL Clear Vial, Rounded Bottom | 21164   | 21165    |
| 20mL Clear Vial, Flat Bottom    | 24685   | 24686    |
| 20mL Clear Vial, Rounded Bottom | 21162   | 21163    |
| 27mL Clear Vial                 | 21160   | 21161    |



### 20mm Aluminum Seals w/Septa, Assembled

| Description  | 100-pk. | 1000-pk. |
|--|---------|----------|
| Silver Seal w/ PTFE/Gray Butyl Rubber  | 21761   | 21762    |
| Silver Seal w/ PTFE/Silicone   | 21763   | 21764    |
| Pressure Release Silver Seal w/ PTFE/Gray Butyl Rubber Septum                | 21765   | 21766    |
| Pressure Release Silver Seal w/ PTFE/Silicone Septum                         | 21767   | 21768    |
| 20mm Magnetic Crimp Cap w/ Teflon®/Silicone Septum (tan/white) with 8mm Hole | 22831   | 22832    |
| 20mm Magnetic Crimp Cap w/ Teflon®/Silicone Septum (tan/white) with 5mm Hole | 22833   | 22834    |
| 20mm Magnetic Crimp Cap w/ PTFE/Butyl Septum with 8mm Hole                   | 22835   | 22836    |
| 20mm Magnetic Crimp Cap w/ PTFE/Butyl Septum with 5mm Hole                   | 22837   | 22838    |



new!

5mm hole is compatible with the following systems: Carlo Erba HS500/HS800, CTC 500, Fisons HS500/HS800 and Varian/Chrompack 9020/25. 8mm hole is compatible with the Combi Pal.

## Crimpers & Decappers

Safer than removing caps with pliers, knife or screwdriver blades!



### Aluminum Seal Crimpers and Decappers

The crimper is adjustable for optimized sealing performance and is comfortable enough for prolonged use. If you need to save, transfer, or dispose of your samples, our decapper allows you to remove a crimp-top cap safely and easily. Far safer than removing caps with pliers, knife or screwdriver blades, etc. If you aren't currently using a seal decapper, we recommend you order one today!



| Description   | qty. | cat.# |
|---------------|------|-------|
| 8mm Crimper   | ea.  | 21735 |
| 8mm Decapper  | ea.  | 21736 |
| 11mm Crimper  | ea.  | 21170 |
| 11mm Decapper | ea.  | 21171 |
| 13mm Crimper  | ea.  | 21739 |
| 13mm Decapper | ea.  | 21740 |
| 20mm Crimper  | ea.  | 21737 |
| 20mm Decapper | ea.  | 21738 |

### Hand-held Rechargeable Crimpers and Rechargeable Decappers

- Easy to use; comfortable grip.
- Hundreds of operations from one charge.
- Adjustable crimping force.
- All kits include battery charger.

Powered by a standard Black and Decker Versapak® battery, these electronic tools for 11mm or 20mm caps will cycle hundreds of times on a single charge. The cycle is controlled precisely, through an internal counter, and is adjusted with two buttons on the side of the case. The tools fit comfortably in the hand and weigh approximately 600 grams. The jaws can be positioned easily around closely-spaced vials in standard autosampler trays. Each kit includes the tool, a Versapak® Gold rechargeable battery, which uses environmentally friendly NiMH technology, and a charger. Recharging generally takes 6-9 hours.



The Electronic Crimper fits around vials in standard autosampler trays. The adjustable setting provides a precision crimp, vial after vial.

### Decapping has never been easier!

one...



two...



three!



| Description  | qty. | cat.#     |
|--|------|-----------|
| 11mm Electronic Crimper (110 volt battery charger)           | kit  | 22853     |
| 11mm Electronic Crimper (220 volt European battery charger)  | kit  | 22853-EUR |
| 11mm Electronic Crimper (220 volt UK battery charger)        | kit  | 22853-UK  |
| 11mm Electronic Decapper (110 volt battery charger)          | kit  | 22854     |
| 11mm Electronic Decapper (220 volt European battery charger) | kit  | 22854-EUR |
| 11mm Electronic Decapper (220 volt UK battery charger)       | kit  | 22854-UK  |
| 20mm Electronic Crimper (110 volt battery charger)           | kit  | 22851     |
| 20mm Electronic Crimper (220 volt European battery charger)  | kit  | 22851-EUR |
| 20mm Electronic Crimper (220 volt UK battery charger)        | kit  | 22851-UK  |
| 20mm Electronic Decapper (110 volt battery charger)          | kit  | 22852     |
| 20mm Electronic Decapper (220 volt European battery charger) | kit  | 22852-EUR |
| 20mm Electronic Decapper (220 volt UK battery charger)       | kit  | 22852-UK  |

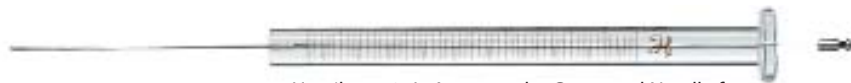


**Standard MICROLITER™ Syringes for Agilent 7673, 7683, and 6850 Autosamplers**

- Hamilton and SGE syringes are designed and tested to meet critical autosampler performance.
- Needle point styles are designed to withstand multiple, rapid injections through a septum.

for **more info**

See **page 52** for Needle Gauge Chart and Needle Point Style drawings.



Hamilton 10µL, Autosampler Cemented Needle for Agilent 7673, 7683, 6850 Autosamplers

**Hamilton Syringes**

| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | Hamilton |       | Restek      |
|--------|--------------|--------------|---------------|-------------|----------|-------|-------------|
|        |              |              |               |             | Model    | cat.# |             |
| 0.5µL  | ASRN         | 23s          | 1.71"         | Agilent     | 7000.5   | 86276 | ea. 24895   |
| 0.5µL  | ASRN         | 26s          | 1.71"         | Agilent     | 7000.5   | 86274 | ea. 21221   |
| 5µL    | ASRN         | 23s          | 1.71"         | Agilent     | 75       | 87957 | ea. 20172   |
| 5µL    | ASN          | 23s          | 1.71"         | Agilent     | 75       | 87987 | ea. 20168   |
| 5µL    | ASN          | 23s          | 1.71"         | Agilent     | 75       | 87990 | 6-pk. 20170 |
| 5µL    | ASN          | 26s          | 1.71"         | Agilent     | 75       | 87988 | ea. 24592   |
| 5µL    | ASN          | 26s          | 1.71"         | Agilent     | 75       | 87989 | 6-pk. 21230 |
| 5µL    | ASRN         | 23s-26s      | 1.71"         | Agilent     | 75       | 87959 | ea. 21223   |
| 5µL    | ASN          | 23s-26s      | 1.71"         | Agilent     | 75       | 87993 | ea. 24593   |
| 5µL    | ASN          | 23s-26s      | 1.71"         | Agilent     | 75       | 87994 | 6-pk. 24594 |
| 10µL   | ASRN         | 23s          | 1.71"         | Agilent     | 701      | 80357 | ea. 20171   |
| 10µL   | ASN          | 23s          | 1.71"         | Agilent     | 701      | 80387 | ea. 20167   |
| 10µL   | ASN          | 23s          | 1.71"         | Agilent     | 701      | 80390 | 6-pk. 20169 |
| 10µL   | ASRN         | 26s          | 1.71"         | Agilent     | 701      | 80358 | ea. 24597   |
| 10µL   | ASN          | 26s          | 1.71"         | Agilent     | 701      | 80388 | ea. 24595   |
| 10µL   | ASN          | 26s          | 1.71"         | Agilent     | 701      | 80389 | 6-pk. 24599 |
| 10µL   | ASRN         | 23s-26s      | 1.71"         | Agilent     | 701      | 80359 | ea. 24598   |
| 10µL   | ASN          | 23s-26s      | 1.71"         | Agilent     | 701      | 80393 | ea. 24596   |
| 10µL   | ASN          | 23s-26s      | 1.71"         | Agilent     | 701      | 80391 | 6-pk. 24600 |



SGE Removable Needle for Agilent 7673, 7683, 6850 Autosamplers

**SGE Syringes**

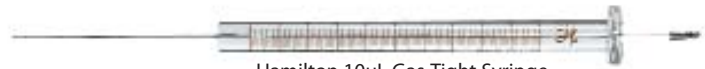
| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | SGE                 |        | Restek      |
|--------|--------------|--------------|---------------|-------------|---------------------|--------|-------------|
|        |              |              |               |             | Model               | cat.#  |             |
| 0.5µL  | R            | 23           | 42mm          | Cone        | 0.5BR-HP-0.63       | 000410 | ea. 24791   |
| 0.5µL  | R            | 26           | 42mm          | Cone        | 0.5BR-HP-0.47       | 000400 | ea. 24790   |
| 5µL    | R            | 23           | 42mm          | Cone        | 5R-HP-0.63          | 001815 | ea. 24793   |
| 5µL    | F            | 23           | 42mm          | Cone        | 5F-HP-0.63          | 001810 | ea. 24781   |
| 5µL    | F            | 23           | 42mm          | Cone        | SK-5F-HP-0.63       | 001814 | 6-pk. 24783 |
| 5µL    | R            | 26           | 42mm          | Cone        | 5R-HP-0.47          | 001805 | ea. 24792   |
| 5µL    | F            | 26           | 42mm          | Cone        | 5F-HP-0.47          | 001800 | ea. 24780   |
| 5µL    | F            | 26           | 42mm          | Cone        | SK-5F-HP-0.47       | 001804 | 6-pk. 24782 |
| 5µL    | R            | 23-26s       | 42mm          | Cone        | 5R-HP-0.63/0.47     | 001825 | ea. 21211   |
| 5µL    | F            | 23-26s       | 42mm          | Cone        | 5F-HP-0.63/0.47     | 001821 | ea. 21210   |
| 5µL    | F            | 23-26s       | 42mm          | Cone        | SK-5F-HP-0.63/0.47  | 001822 | 6-pk. 21214 |
| 10µL   | R            | 23           | 42mm          | Cone        | 10R-HP-0.63         | 002815 | ea. 24795   |
| 10µL   | F            | 23           | 42mm          | Cone        | 10F-HP-0.63         | 002810 | ea. 24785   |
| 10µL   | F            | 23           | 42mm          | Cone        | SK-10F-HP-0.63      | 002814 | 6-pk. 24787 |
| 10µL   | R            | 26           | 42mm          | Cone        | 10R-HP-0.47         | 002805 | ea. 24794   |
| 10µL   | F            | 26           | 42mm          | Cone        | 10F-HP-0.47         | 002800 | ea. 24784   |
| 10µL   | F            | 26           | 42mm          | Cone        | SK-10F-HP-0.47      | 002804 | 6-pk. 24786 |
| 10µL   | R            | 23-26s       | 42mm          | Cone        | 10R-HP-0.63/0.47    | 002825 | ea. 21213   |
| 10µL   | F            | 23-26s       | 42mm          | Cone        | 10F-HP-0.63/0.47    | 002821 | ea. 21212   |
| 10µL   | F            | 23-26s       | 42mm          | Cone        | SK-10F-HP-0.63/0.47 | 002822 | 6-pk. 21215 |

**Guide to Needle Termination Codes**

**Hamilton:**  
 (N) Cemented Needle  
 (RN) Removable Needle  
 (ASN) Autosampler Cemented Needle  
 (ASRN) Autosampler Removable Needle  
 (TLL) Teflon® Luer Lock  
 (KH) Knurled Hub  
 (LT) Luer Tip  
 (LTN) Luer Tip Cemented Needle

**SGE:**  
 (F) Fixed Needle  
 (R) Removable Needle  
 (LL) Luer Lock  
 (LT) Luer Tip

**GASTIGHT® Teflon®-Tipped Syringes for Agilent 7673, 7683, and 6850 Autosamplers**



Hamilton 10µL Gas-Tight Syringe

**Hamilton Syringes**

| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | Hamilton |       | qty. | Restek cat.# |
|--------|--------------|--------------|---------------|-------------|----------|-------|------|--------------|
|        |              |              |               |             | Model    | cat.# |      |              |
| 5µL    | ASN          | 23s          | 1.71"         | Agilent     | 175      | 80074 | ea.  | 24893        |
| 10µL   | ASN          | 23s          | 1.71"         | Agilent     | 1701     | 80080 | ea.  | 24894        |
| 10µL   | ASRN         | 23s          | 1.71"         | Agilent     | 1701     | 80087 | ea.  | 21224        |
| 10µL   | ASRN         | 26s          | 1.71"         | Agilent     | 1701     | 80088 | ea.  | 21228        |
| 10µL   | ASRN         | 23s–26s      | 1.71"         | Agilent     | 1701     | 80089 | ea.  | 21229        |

**SGE Syringes**

| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | SGE                 |        | qty. | Restek cat.# |
|--------|--------------|--------------|---------------|-------------|---------------------|--------|------|--------------|
|        |              |              |               |             | Model               | cat.#  |      |              |
| 10µL   | F            | 23           | 42mm          | Cone        | 10F-HP-GT-0.63      | 002812 | ea.  | 24789        |
| 10µL   | R            | 23           | 42mm          | Cone        | 10R-HP-GT-0.63      | 002818 | ea.  | 24797        |
| 10µL   | R            | 23–26        | 42mm          | Cone        | 10R-HP-GT-0.63/0.47 | 002829 | ea.  | 21220        |

**Guide to Needle Termination Codes**

**Hamilton:**

- (N) Cemented Needle
- (RN) Removable Needle
- (ASN) Autosampler Cemented Needle
- (ASRN) Autosampler Removable Needle
- (TLL) Teflon® Luer Lock
- (KH) Knurled Hub
- (LT) Luer Tip
- (LTN) Luer Tip Cemented Needle

**SGE:**

- (F) Fixed Needle
- (R) Removable Needle
- (LL) Luer Lock
- (LT) Luer Tip

**Large Volume Syringes for Agilent 7673, 7683, and 6850 Autosamplers**

**SGE Syringes**

| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | SGE          |        | qty. | Restek cat.# |
|--------|--------------|--------------|---------------|-------------|--------------|--------|------|--------------|
|        |              |              |               |             | Model        | cat.#  |      |              |
| 25µL   | R            | 23           | 42mm          | Cone        | 25R-HP-0.63  | 003665 | ea.  | 24798        |
| 50µL   | R            | 23           | 42mm          | Cone        | 50R-HP-0.63  | 004665 | ea.  | 24799        |
| 100µL  | R            | 23           | 42mm          | Cone        | 100R-HP-0.63 | 005665 | ea.  | 24800        |
| 250µL  | R            | 23           | 42mm          | Cone        | 250R-HP-0.63 | 006665 | ea.  | 24801        |

**Replacement Needles for Agilent 7673, 7683, and 6850 Autosampler Syringes**



**Needles for Hamilton Syringes**

| Syringe Volume | Needle Gauge | Needle Length | Point Style | Hamilton cat.# | qty.  | Restek cat.# |
|----------------|--------------|---------------|-------------|----------------|-------|--------------|
| 5–10µL         | 23s          | 1.71"         | Agilent     | 7786-01        | 6-pk. | 20164        |
| 5–10µL         | 26s          | 1.71"         | Agilent     | 7786-02        | 6-pk. | 20165        |
| 5–10µL         | 23s–26s      | 1.71"         | Agilent     | 7785-01        | 6-pk. | 20166        |

**Needles for SGE Syringes**

| Syringe Volume | Needle Gauge | Needle Length | Point Style | SGE cat.# | qty.  | Restek cat.# |
|----------------|--------------|---------------|-------------|-----------|-------|--------------|
| 0.5µL          | 23           | 42mm          | Cone        | 033715    | ea.   | 24821        |
| 5µL            | 23           | 42mm          | Cone        | 036720    | 2-pk. | 24823        |
| 5µL            | 26           | 42mm          | Cone        | 036710    | 2-pk. | 24822        |
| 10µL           | 23           | 42mm          | Cone        | 037717    | 2-pk. | 24825        |
| 10µL           | 26           | 42mm          | Cone        | 037715    | 2-pk. | 24824        |
| 25–250µL       | 23           | 42mm          | Cone        | 038717    | 2-pk. | 24826        |

**Teflon® Tip, Gas-Tight Syringes**

- Suitable for gases or liquids for maximum inertness.
- High accuracy of dispensed volumes.
- Interchangeable barrels, plungers, and tips extend performance and increase cost-effectiveness.

for **more** infoSee **page 52** for Needle Gauge Chart and Needle Point Style drawings.

Hamilton 1700/1000 Series Gas-Tight Syringe

**Hamilton Syringes**

| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | Hamilton |       | qty. | Restek cat.# |
|--------|--------------|--------------|---------------|-------------|----------|-------|------|--------------|
|        |              |              |               |             | Model    | cat.# |      |              |
| 10µL   | N            | 26s          | 2"/51mm       | 2           | 1701     | 80000 | ea.  | 24557        |
| 10µL   | RN           | 26s          | 2"/51mm       | 2           | 1701     | 80030 | ea.  | 24558        |
| 25µL   | N            | 22s          | 2"/51mm       | 2           | 1702     | 80200 | ea.  | 24559        |
| 25µL   | RN           | 22s          | 2"/51mm       | 2           | 1702     | 80230 | ea.  | 24560        |
| 50µL   | N            | 22s          | 2"/51mm       | 2           | 1705     | 80900 | ea.  | 24561        |
| 50µL   | RN           | 22s          | 2"/51mm       | 2           | 1705     | 80930 | ea.  | 24562        |
| 100µL  | N            | 22s          | 2"/51mm       | 2           | 1710     | 81000 | ea.  | 24563        |
| 100µL  | RN           | 22s          | 2"/51mm       | 2           | 1710     | 81030 | ea.  | 24564        |
| 250µL  | N            | 22s          | 2"/51mm       | 2           | 1725     | 81100 | ea.  | 24567        |
| 250µL  | RN           | 22s          | 2"/51mm       | 2           | 1725     | 81130 | ea.  | 24568        |
| 500µL  | LTN          | 22           | 2"/51mm       | 2           | 1750     | 81217 | ea.  | 24571        |
| 500µL  | RN           | 22           | 2"/51mm       | 2           | 1750     | 81230 | ea.  | 24572        |
| 1mL    | LTN          | 22           | 2"/51mm       | 2           | 1001     | 81317 | ea.  | 24575        |
| 1mL    | RN           | 22           | 2"/51mm       | 2           | 1001     | 81330 | ea.  | 24576        |
| 1mL    | TLL          | *            | —             | w/out slots | 1001     | 81320 | ea.  | 24578        |
| 2.5mL  | TLL          | *            | —             | w/out slots | 1002     | 81420 | ea.  | 24584        |
| 2.5mL  | RN           | 22           | 2"/51mm       | 2           | 1002     | 81430 | ea.  | 24582        |
| 2.5mL  | N            | 22           | 2"/51mm       | 2           | 1002     | 81417 | ea.  | 24581        |
| 5mL    | TLL          | *            | —             | w/out slots | 1005     | 81520 | ea.  | 20178        |
| 10mL   | TLL          | *            | —             | w/out slots | 1010     | 81620 | ea.  | 20179        |
| 25mL   | TLL          | *            | —             | w/out slots | 1025     | 82520 | ea.  | 24591        |
| 50mL   | TLL          | *            | —             | w/out slots | 1050     | 85020 | ea.  | 24717        |



SGE Gas-Tight Syringe

**SGE Syringes**

| Volume | Needle Term. | Needle Gauge | Needle Length | Point Style | SGE          |        | qty. | Restek cat.# |
|--------|--------------|--------------|---------------|-------------|--------------|--------|------|--------------|
|        |              |              |               |             | Model        | cat.#  |      |              |
| 10µL   | F            | 26           | 50mm          | 2           | 10F-GT       | 002200 | ea.  | 24725        |
| 10µL   | R            | 26           | 50mm          | 2           | 10R-GT       | 002250 | ea.  | 24726        |
| 25µL   | F            | 25           | 50mm          | 2           | 25F-GT       | 003200 | ea.  | 24727        |
| 25µL   | R            | 25           | 50mm          | 2           | 25R-GT       | 003250 | ea.  | 24728        |
| 50µL   | F            | 25           | 50mm          | 2           | 50F-GT       | 004200 | ea.  | 24729        |
| 50µL   | R            | 25           | 50mm          | 2           | 50R-GT       | 004250 | ea.  | 24730        |
| 100µL  | F            | 25           | 50mm          | 2           | 100F-GT      | 005200 | ea.  | 24734        |
| 100µL  | R            | 25           | 50mm          | 2           | 100R-GT      | 005250 | ea.  | 24735        |
| 100µL  | LL           | *            | —             | —           | 100F-LL-GT   | 005230 | ea.  | 24737        |
| 250µL  | F            | 25           | 50mm          | 2           | 250F-GT      | 006200 | ea.  | 24738        |
| 250µL  | R            | 25           | 50mm          | 2           | 250R-GT      | 006250 | ea.  | 24739        |
| 250µL  | LL           | *            | —             | —           | 250F-LL-GT   | 006230 | ea.  | 24741        |
| 500µL  | F            | 25           | 50mm          | 2           | 500F-GT      | 007200 | ea.  | 24742        |
| 500µL  | R            | 25           | 50mm          | 2           | 500R-GT      | 007250 | ea.  | 24743        |
| 1mL    | R            | 23           | 50mm          | 2           | 1MR-GT       | 008100 | ea.  | 24750        |
| 1mL    | LL           | *            | —             | —           | 1MDF-LL-GT   | 008025 | ea.  | 24752        |
| 2.5mL  | LL           | *            | —             | —           | 2.5MDF-LL-GT | 008425 | ea.  | 24755        |
| 5mL    | LL           | *            | —             | —           | 5MDR-LL-GT   | 008760 | ea.  | 24757        |
| 10mL   | LL           | *            | —             | —           | 10MDR-LL-GT  | 008960 | ea.  | 24759        |
| 25mL   | LL           | *            | —             | —           | 25MDR-LL-GT  | 009462 | ea.  | 24760        |
| 50mL   | LL           | *            | —             | —           | 50MR-LL-GT   | 009660 | ea.  | 24761        |
| 100mL  | LL           | *            | —             | —           | 100MR-LL-GT  | 009760 | ea.  | 24762        |

\*Needles sold separately. See page 52.

## Gas-Tight Syringes

### Teflon® Tip, Gas-Tight Syringe Replacement Needles for Removable Needle Syringes

Materials: stainless steel needle, nickel plated brass hub



#### Needles for Hamilton Syringes

| Syringe Volume | Needle Gauge | Needle Length | Point Style | Hamilton cat.# | qty.  | Restek cat.# |
|----------------|--------------|---------------|-------------|----------------|-------|--------------|
| 5–100µL        | 26s          | 2"            | 2           | 7758-02        | 6-pk. | 24939        |
| 5–100µL        | 22s          | 2"            | 2           | 7758-03        | 6-pk. | 24940        |
| 250µL–10mL     | 22           | 2"            | 2           | 7779-01        | 6-pk. | 24942        |
| 250µL–10mL     | 26s          | 2"            | 2           | 7779-02        | 6-pk. | 24943        |
| 250µL–10mL     | 22s          | 2"            | 2           | 7779-03        | 6-pk. | 24944        |



#### Needles for SGE Syringes

| Syringe Volume | Needle Gauge | Needle Length | Point Style | SGE cat.# | qty.  | Restek cat.# |
|----------------|--------------|---------------|-------------|-----------|-------|--------------|
| 5µL            | 26           | 50mm          | 2           | 036110    | 5-pk. | 24802        |
| 10µL           | 23           | 50mm          | 2           | 037111    | 5-pk. | 24804        |
| 10µL           | 26           | 50mm          | 2           | 037110    | 5-pk. | 24803        |
| 25–500µL       | 23           | 50mm          | 2           | 038111    | 5-pk. | 24806        |
| 25–500µL       | 25           | 50mm          | 2           | 038110    | 5-pk. | 24805        |
| 1–2.5mL        | 23           | 50mm          | 2           | 039110    | 5-pk. | 24807        |

## did you know?

Syringes and needles manufactured by Hamilton Company and SGE are intended for scientific research and laboratory use only and are not intended for human *in vivo* use.

## Needle Gauge Chart

| Gauge | Nominal OD |      | Nominal ID |      |
|-------|------------|------|------------|------|
|       | in.        | mm   | in.        | mm   |
| 26s   | 0.019      | 0.47 | 0.0050     | 0.13 |
| 26    | 0.018      | 0.46 | 0.0102     | 0.26 |
| 25    | 0.021      | 0.51 | 0.0102     | 0.26 |
| 23s   | 0.025      | 0.64 | 0.0060     | 0.15 |
| 23    | 0.025      | 0.64 | 0.0132     | 0.34 |
| 22s   | 0.028      | 0.72 | 0.0060     | 0.15 |
| 22    | 0.028      | 0.72 | 0.0162     | 0.41 |

### Needle Point Style



**Point Style 2, BV:** Beveled needle tip. Recommended for optimum septum penetration and prevention of septum coring.



**Point Style Agilent/Cone:** Special conical style needle point used exclusively on syringes for autosamplers.

Part Number Cross Reference

| Similar to Agilent Part # | Restek Part # | Page   | Product Name                                  | Similar to Agilent Part # | Restek Part # | Page   | Product Name  |
|---------------------------|---------------|--------|---|---------------------------|---------------|--------|---|
| G1099-20030               | 21894         | 22     | Capillary Installation Gauge                  | 500-2114                  | 20250         | 31     | Compact Ferrules  |
| G1530-60600               | 22694         | 29     | Replacement Cable                             | 5020-8292                 | 21311, 21312  | 11     | Finger-Tight Capillary Column Nuts                          |
| G1530-60930               | 20929         | 29     | Replacement Cable                             | 5020-8293                 | 21311, 21312  | 11     | Finger-Tight Capillary Column Nuts                          |
| G1530-60960               | 24323         | 15     | EPC Test Kit                                  | 5020-8294                 | 21883         | 27     | Detector Plug Nut   |
| G1530-61030               | 23039         | 15     | Oven Temp Sensor                              | 5061-5869                 | 21710         | 13     | Replacement Inlet Seal Washers (15-pk.)                     |
| G1530-80650               | 22076         | 19     | Air Diverter                                  | 5062-3506                 | 20212         | 31     | Capillary Ferrules  |
| G1531-20550               | 23043         | 24     | FID Collector Mount                           | 5062-3508                 | 20211         | 31     | Capillary Ferrules  |
| G1531-20550               | 23045         | 24     | FID Collector Housing Kit                     | 5062-3538                 | 20213         | 31     | Capillary Ferrules  |
| G1531-20690               | 21139         | 25     | FID Collector                                 | 5062-3580                 | 20241         | 18, 32 | Replacement Ferrules  |
| G1531-20700               | 21139         | 25     | FID Collector                                 | 5062-3581                 | 20242         | 18, 32 | Replacement Ferrules  |
| G1531-20740               | 23044         | 24     | FID Collector Housing                         | 5062-3587                 | 22405         | 6      | Gooseneck Splitless Liner (4mm) w/ Wool                     |
| G1531-60690               | 21699         | 25     | FID Collector Assembly                        | 5080-8732                 | 20964, 20965  | 17     | DI Uniliner Liners for Packed Column GC                     |
| G1531-80560               | 21620, 21621  | 26     | FID Jets (.011")                              | 5080-8732                 | 20966, 20967  |        |   |
|                           | 21682, 21683  |        |   | 5080-8773                 | 20252         | 31     | Compact Ferrules  |
| G1531-80580               | 23052         | 24     | FID Base Weldment, Pack Column FID            | 5080-8898                 | 21685         | 16     | Viton Replacement O-rings (10-pk.)                          |
| G1531-80630               | 23053         | 24     | FID Base Weldment, Capillary Column FID       | 5180-4165                 | 23064         | 24     | Replacement Silicone Washers for FID Collector Housing      |
| G1532-80540               | 20269         | 27     | TCD Adaptor Fitting                           | 5180-4168                 | 20296, 20297  | 9      | Graphite O-rings for split liners                           |
| G1544-20590               | 23042         | 15     | Heater Block Retaining Nut                    | 5180-4173                 | 20298, 20299  | 9      | Graphite O-rings for splitless liners                       |
| G1544-20620               | 22800         | 15     | Split Vent Line for Agilent GCs (32-inch)     | 5180-4181                 | 22064         | 14, 15 | O-rings for Agilent Trap Fittings (25-pk.)                  |
| G1544-60575               | 22672, 22674  | 14     | Weldment with EPC                             | 5180-4182                 | 20377         | 9      | Viton O-Rings for Agilent GCs (25-pk.)                      |
| G1544-60585               | 22670, 22686  | 14     | Optional Split/Splitless Weldment             | 5181-1210                 | 21174         | 46     | Aluminum Seals, Silver Seal, PTFE/Natural Rubber Septa      |
| G1544-60610               | 23031         | 14, 15 | Optional Split Vent Trap Assembly             | 5181-1267                 | 21212, 24596  | 49     | 10µL Standard Microliter Syringes                           |
| G1544-80530               | 23032         | 14, 15 | Replacement Traps and O-rings                 | 5181-1270                 | 24513         | 46     | 50µL Glass, Big Mouth, Bottom Spring Vial Inserts           |
| G1544-80550               | 22820         | 15     | Replacement Chemical Trap                     | 5181-1273                 | 21210, 24593  | 49     | 5µL Standard Microliter Syringes                            |
| G1544-80570               | 22671, 22673  | 14     | Shell Weldment                                | 5181-3311                 | 21136         | 25     | FID Collector Nut and Washer                                |
| G1544-80700               | 20954, 20989  | 8      | Double Gooseneck Drilled Unliners             | 5181-3315                 | 20784         | 6      | Double Gooseneck Splitless Liner (4mm)                      |
| G1544-80730               | 20756, 20771  | 8      | Drilled Unliners                              | 5181-3316                 | 20798         | 6      | Gooseneck Splitless Liner (4mm)                             |
| G2613-20500               | 21172         | 28     | Injector Mounting Post                        | 5181-3319                 | 20166         | 50     | Needles for 5-10µL Syringes (6-pk.)                         |
| G2630-60710               | 20926         | 19     | Air Diverter                                  | 5181-3321                 | 21213, 24598  | 49     | 10µL Standard Microliter Syringes                           |
| 03394-60540               | 20655, 20656  | 29     | Replacement Cable                             | 5181-3360                 | 21215, 24600  | 49     | 10µL Standard Microliter Syringes (6-pk.)                   |
| 03394-60560               | 20654         | 29     | Replacement Cable                             | 5181-3376                 | 24385         | 46     | 2.0mL Amber Glass Vial                                      |
| 05890-60800               | 20652, 20653  | 29     | Replacement Cable                             | 5181-3377                 | 24517         | 46     | 350µL Glass, Flat Bottom Vial Insert                        |
| 05890-61030               | 23040         | 15     | Oven Temp Sensor                              | 5181-3382                 | 20964, 20965  | 17     | DI Uniliner Liners for Packed Column GC                     |
| 05890-61080               | 20657         | 29     | Replacement Cable                             |                           | 20966, 20967  |        |   |
| 05890-61140               | 22068         | 15, 24 | Injector/FID Heater + Injector/FID PRT Sensor | 5181-3395                 | 20400         | 33     | Press-Tight Connector                                       |
| 05890-61260               | 21610         | 15     | Replacement Chemical Trap                     | 5181-3396                 | 20429         | 33     | Deactivated Press-Tight Connector                           |
| 05921-21170               | 20883, 21879  | 11     | Capillary Column Nuts (2-pk.)                 | 5181-3397                 | 20405         | 33     | "Y" Press-Tight Connector                                   |
| 05971-20305               | 24699         | 22     | Gold Tip Transfer Line                        | 5181-3398                 | 20405-261     | 33     | Deactivated "Y" Press-Tight Connector                       |
| 05971-20307               | 22660         | 23     | Replacement Interface Guide Tube              | 5181-8809                 | 24789, 24894  | 50     | 10µL Gas-Tight Syringes                                     |
| 05971-60302               | 22659         | 23     | Replacement Interface with Bellows            | 5181-8811                 | 20164         | 50     | Needles for 5-10µL Syringes                                 |
| 05971-60540               | 22662         | 23     | Replacement Diffusion Pump Fan Assembly       |                           | 24825         |        |   |
| 05972-60540               | 22663         | 23     | Replacement Diffusion Pump Fan Assembly       | 5181-8813                 | 21224, 24797  | 50     | 10µL Gas-Tight Syringes                                     |
| 05988-20066               | 20643         | 22     | (Detector) MSD Source Nut (2-pk.)             | 5181-8818                 | 20712         | 6      | 2mm Splitless Liner   |
| 07673-21140               | 21237         | 28     | Injector Mounting Post                        | 5181-8830                 | 21878, 21884  | 11     | Capillary Column Nuts (2-pk.)                               |
| 07673-60810               | 22337         | 28     | Injector Turret Motor                         | 5182-0543                 | 24383         | 46     | 2.0mL Clear Glass Vials                                     |
| 07673-60890               | 22693         | 28     | Carriage Motor                                | 5182-0549                 | 24518         | 46     | 250µL Polypropylene Vial Inserts                            |
| 07673-61275               | 22695         | 28     | Autosampler Plunger Carrier Belt              | 5182-0552                 | 24359         | 46     | Silver Seal, PTFE/Silicone Septa Vials                      |
| 1500-0676                 | 22692         | 28     | Carriage Motor Belt                           | 5182-0714                 | 21154         | 47     | 2.0mL Clear Vial  |
| 1500-0803                 | 22332         | 28     | Z-Belt  | 5182-0715                 | 21140         | 47     | 2.0mL Clear Vial  |
| 18597-60805               | 21236         | 28     | Injector Mounting Post                        | 5182-0716                 | 21142         | 47     | 2.0mL Amber Vial  |
| 18710-20119               | 21694, 21695  | 26     | FID Jets (.018")                              | 5182-0717                 | 24473         | 47     | 9mm Screw-Top Caps, Blue Cap, PTFE/Natural Rubber Liner     |
|                           | 21696, 21697  |        |   | 5182-0720                 | 24485         | 47     | 9mm Screw-Top Caps, Blue Cap, PTFE/Silicone Liner           |
| 18740-20800               | 22078         | 18     | Reducing Nut                                  | 5182-0723                 | 24497         | 47     | 9mm Screw-Top Caps, Blue Cap, PTFE/Silicone/PTFE Liner      |
| 18740-20880               | 21315, 21316  | 13     | Replacement Inlet Seal (0.8mm hole)           | 5182-0830                 | 24821         | 50     | Needles for 0.5µL Syringes                                  |
| 18740-20885               | 21317, 21318  | 13     | Replacement Inlet Seal (0.8mm hole)           | 5182-0834                 | 20172, 24793  | 49     | 5µL Microliter Syringes                                     |
| 18740-20940               | 20409         | 15     | Heat Sink                                     | 5182-0835                 | 21211, 21223  | 49     | 5µL Microliter Syringes                                     |
| 18740-60835               | 20631, 21309  | 10     | Septum Nuts                                   | 5182-0875                 | 20170, 24783  | 49     | 5µL Microliter Syringes (6-pk.)                             |
| 18740-80190               | 20709         | 7      | Cup Splitter Liner                            | 5182-9652                 | 20476, 20477  | 13     | Replacement Inlet Seals (0.8mm ID)                          |
| 18740-80200               | 20972         | 7      | 1mm Split Liner                               | 5182-9749                 | 22684         | 9      | Liner Seals for C15A and PTV (5-pk.)                        |
| 18740-80220               | 20914         | 6      | 2mm Splitless Liner (quartz)                  | 5182-9763                 | 21409         | 13     | Silver PTV Seals (5-pk.)                                    |
| 18789-80070               | 21686, 21687  | 26     | FID Jets (.030")                              | 5183-2036                 | 21157         | 7      | Straight Glass Liner (10-pk.)                               |
|                           | 21688, 21689  |        |   | 5183-2037                 | 21704         | 7      | Baffled Glass Liner (10-pk.)                                |
| 19231-00130               | 22329         | 24     | Spanner Wrench for FID Collector Assembly     | 5183-2038                 | 21156         | 7      | Glass Liner w/ Wool (10-pk.)                                |
| 19231-20910               | 21137         | 25     | FID Ignitor Castle                            | 5183-2068                 | 21141         | 47     | 2.0mL Clear Vial  |
| 19231-20920               | 23037         | 24     | FID Collector Housing Kit                     | 5183-2069                 | 21143         | 47     | 2.0mL Amber Vial  |
| 19231-20930               | 23036         | 24     | FID Collector Mount                           | 5183-4492                 | 24384         | 46     | 2.0mL Clear Glass Vial                                      |
| 19231-20940               | 21136         | 25     | FID Collector Nut and Washer                  | 5183-4493                 | 24386         | 46     | 2.0mL Amber Glass Vial                                      |
| 19231-20950               | 21138         | 25     | FID Collector                                 | 5183-4498                 | 21175         | 46     | 11mm Aluminum Seals, Silver Seal, PTFE/Natural Rubber Septa |
| 19231-20960               | 21138         | 25     | FID Collector                                 |                           |               |        |   |
| 19231-20970               | 21138         | 25     | FID Collector                                 | 5183-4500                 | 24360         | 46     | 11mm Crimp Seals, Silver Seal, PTFE/Silicone Septa          |
| 19231-60620               | 22069         | 15, 24 | Injector/FID Heater                           | 5183-4647                 | 21032         | 7      | Low Pressure Drop Liner w/ Wool                             |
| 19231-60660               | 23035         | 15, 24 | Injector/FID PRT Sensor                       | 5183-4691                 | 22401, 20782  | 6, 7   | 4mm Split and Splitless Liners w/ Wool (5-pk.)              |
| 19231-60680               | 21001         | 25     | FID Ignitor                                   | 5183-4692                 | 22402, 20783  | 6, 7   | 4mm Split and Splitless Liners w/ Wool (25-pk.)             |
| 19231-60690               | 23010         | 25     | FID Collector Assembly                        | 5183-4693                 | 22406         | 6      | Gooseneck Splitless Liner (4mm) w/ Wool (5-pk.)             |
| 19231-80580               | 23041         | 24     | FID Base Weldment                             | 5183-4694                 | 22407         | 6      | Gooseneck Splitless Liner (4mm) w/ Wool (25-pk.)            |
| 19243-80570               | 21691         | 16     | Septum Packed Purge Port Weldment             | 5183-4695                 | 20799         | 6      | Gooseneck Splitless Liner (4mm) (5-pk.)                     |
| 19244-80540               | 21303         | 17     | DI Liner Adaptor for Packed Column GC         | 5183-4696                 | 20800         | 6      | Gooseneck Splitless Liner (4mm) (25-pk.)                    |
| 19244-80560               | 20670, 20671  | 26     | FID Jets                                      | 5183-4699                 | 20710         | 7      | Cup Splitter Liner (5-pk.)                                  |
|                           | 20672, 20673  |        |   | 5183-4701                 | 21033         | 7      | Low Pressure Drop Liner w/ Wool (5-pk.)                     |
| 19244-80610               | 22077         | 27     | FID/NPD Capillary Adaptor Fitting             | 5183-4703                 | 20713         | 6      | 2mm Splitless Liner (5-pk.)                                 |
| 19246-60630               | 20634         | 15     | Backpressure Regulator Kit                    | 5183-4704                 | 20714         | 6      | 2mm Splitless Liner (25-pk.)                                |
| 19247-60510               | 22076         | 19     | Air Diverter                                  | 5183-4705                 | 20785         | 6      | Double Gooseneck Splitless Liner (4mm) (5-pk.)              |
| 19251-00100               | 22065         | 10, 20 | Injector Wrench                               | 5183-4706                 | 20786         | 6      | Double Gooseneck Splitless Liner (4mm) (25-pk.)             |
| 19251-20620               | 22080         | 15     | Heater Block Retaining Nut                    | 5183-4707                 | 20915         | 6      | 2mm Splitless Liner (quartz) (5-pk.)                        |
| 19251-60540               | 22400, 20781  | 6, 7   | 4mm Split and Splitless Liners w/ Wool        | 5183-4709                 | 20973         | 7      | 1mm Split Liner (5-pk.)                                     |
| 19251-60575               | 20265, 20267  | 14     | Weldment                                      | 5183-4711                 | 20994         | 7      | Low Pressure Drop Liner w/ Wool                             |
| 19251-80525               | 22800         | 15     | Split Vent Line for Agilent GCs (32-inch)     | 5183-4712                 | 20995         | 7      | Low Pressure Drop Liner w/ Wool (5-pk.)                     |
| 19251-80570               | 20266, 20268  | 14     | Shell Weldment                                | 5183-4713                 | 20996         | 7      | Low Pressure Drop Liner w/ Wool (25-pk.)                    |
| 19301-60660               | 21000         | 25     | FID Flow Measuring Adaptor                    | 5183-4732                 | 21882         | 11     | Capillary Column Nut (2-pk.)                                |
| 19302-80020               | 20269         | 27     | TCD Adaptor Fitting                           | 6040-0834                 | 22687         | 23     | Rough Pump Oil for MSD Pumps                                |
| 19362-60500               | 21158         | 15     | Replacement Chemical Trap                     | 8660-0791                 | 22685         | 23     | Ion Source Cleaning Powder                                  |
| 210-3003                  | 20772         | 6      | 4mm Splitless Liner                           | 9301-0713                 | 20167, 24785  | 49     | 10µL Standard Microliter Syringes                           |
| 210-3003-5                | 20773         | 6      | 4mm Splitless Liner (5-pk.)                   | 9301-0714                 | 24595, 24784  | 49     | 10µL Standard Microliter Syringes                           |
| 210-4004-5                | 21023         | 7      | 4mm Split Precision Liner w/ Wool (5-pk.)     | 9301-0725                 | 20169, 24787  | 49     | 10µL Standard Microliter Syringes (6-pk.)                   |
| 3103-0145                 | 22661         | 23     | Replacement Cold Sensor for MS Diffusion Pump | 9301-0891                 | 24592, 24780  | 49     | 5µL Standard Microliter Syringes                            |
| 35900-60610               | 20650, 20651  | 29     | Replacement Cables                            | 9301-0892                 | 20168, 24781  | 49     | 5µL Standard Microliter Syringes                            |
| 35900-60630               | 20658, 20659  | 29     | Replacement Cables                            | 9301-0977                 | 24653         | 46     | 100µL Glass Insert/Clear Plastic Vial                       |
| 35900-60700               | 20660, 20661  | 29     | Replacement Cables                            | 9301-0978                 | 24651         | 46     | 100µL Polypropylene Vial                                    |
| 500-1210                  | 20445         | 33     | Polyimide Resin                               |                           |               |        |   |

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**Restek France** • phone: 33 (0)1 60 78 32 10 • fax: 33 (0)1 60 78 70 90 • e-mail: [restek@restekfrance.fr](mailto:restek@restekfrance.fr)

**Restek Ireland** • phone: 44 2890 814576 • fax: 44 2890 814576 • e-mail: [resteurope@aol.com](mailto:resteurope@aol.com)

**Thames Restek U.K. LTD** • phone: 44 1494 563377 • fax: 44 1494 564990 • e-mail: [sales@thamesrestek.co.uk](mailto:sales@thamesrestek.co.uk)

**Restek GmbH** • phone: +49 (0) 6172 2797 0 • fax: +49 (0) 6172 2797 77 • e-mail: [info@restekgmbh.de](mailto:info@restekgmbh.de)