

# Maximize Performance!

Gas Chromatography Accessories and  
Gas Purification/Management Products

**SUPELCO®**



Septa

Liners

Ferrules

Syringes

Vials

Purifiers

and more



## Choosing the Correct Products

Choosing the proper items for routine system maintenance and new column installation can save costly downtime and rework, plus help prevent inaccurate chromatographic results. For the practicing gas chromatographer, choosing the correct items when upgrading and replacing parts and accessories for their system can bring on many challenges due to the vast array of commercially available products. At Supelco, we offer our own unique products, as well as products from some of the most trusted names in the industry, to assist in making the selection process easier.

### Preventative Maintenance

Often overlooked is the importance of preventative maintenance of the gas chromatographic system. Many times, maintenance is only performed after a serious problem occurs, and serves solely to remedy the situation. A better choice is to take a proactive, instead of a reactive, approach to maintenance in an effort to prevent problems from manifesting. This can best be performed by strictly adhering to a schedule of routine preventative maintenance. Non-volatile material accumulates on injection port items, creating active spots, leading to poor chromatography and loss of sensitivity. Periodical replacement of injection port items will minimize this adsorption of analytes. Over time, purifiers become saturated and must be replaced to maintain the continuous supply of chromatographic quality carrier gas. To maximize the performance of the chromatographic system, Supelco offers preventative maintenance items only of the highest quality; items such as septa, inlet liners, O-rings, inlet seals, ferrules, and purifiers.

## Quick Look Up Tables

These quick look-up tables can be used as a reference to find frequently replaced accessories for commonly used GC instruments. In-depth details (photos, descriptions and specifications) can be found elsewhere in this brochure.

### Agilent® 5890, 6890, 7890 GCs

| Description  | Cat. No.  | Pkg   |
|--|-----------|-------|
| Molded Thermogreen™ LB-2 Septa, 9.5 mm, with injection hole    | 28331-U   | 50 ea |
| Molded Thermogreen LB-2 Septa, 11 mm, with injection hole      | 28336-U   | 50 ea |
| Inlet Liner, Cup Design, Wool Packed, 4 mm I.D.                | 2048205   | 5 ea  |
| Inlet Liner, Straight Through, Wool Packed, 4 mm I.D.          | 2048605   | 5 ea  |
| Inlet Liner, Single Taper, 4 mm I.D.                           | 2046605   | 5 ea  |
| Inlet Liner, FocusLiner™, Single Taper, Wool Packed, 4 mm I.D. | 2879905-U | 5 ea  |
| Therm-O-Ring™, 1/4 in.   | 21003-U   | 10 ea |
| Gold Plated Inlet Seal   | 23319-U   | 10 ea |
| Supeltex M-2A Short Capillary Ferrules, 0.25 mm Column         | 24803-U   | 10 ea |
| Supeltex M-4 Short Capillary Ferrules, 0.25 mm Column          | 24811-U   | 10 ea |
| Supeltex M-2A Long Capillary Ferrules, 0.25 mm Column          | 24826-U   | 10 ea |
| Column Nut for Agilent   | 24833-U   | 2 ea  |
| Source Column Nut for Agilent MSD                              | 28034-U   | 5 ea  |

### Installation and Troubleshooting

In addition to being required for a scheduled preventative maintenance routine, quality products are also needed for installation and troubleshooting tasks. Some of the same items and tools are used whether performing an initial set-up of a new instrument, the replacement of system components (such as a column), or troubleshooting activities. To aid in accomplishing these tasks, Supelco offers the highest quality products; products such as column nuts, flow meters, tubing, fittings, valves, particle and oil filters, gas generators, leak detectors and pressure regulators. Additionally, Supelco offers numerous hand tools that have been specifically designed to assist the chromatographer in the installation and maintenance associated with gas chromatography.

### Supelco Products

Throughout this brochure you will find GC Accessories and Gas Purification/Management products that are designed to maximize instrument performance while helping to reduce the risk of chromatographic problems. Please note that this represents a brief listing of the GC Accessories and Gas Purification/Management products that we offer. For a complete listing, please refer to our catalog and/or web site, [sigma-aldrich.com/gc](http://sigma-aldrich.com/gc)

### PerkinElmer® AutoSystem™ and Clarus GCs

| Description   | Cat. No.  | Pkg   |
|---|-----------|-------|
| Molded Thermogreen LB-2 Septa, 11 mm, with injection hole     | 28336-U   | 50 ea |
| Inlet Liner, FocusLiner, Single Taper, Wool Packed, 4 mm I.D. | 2879105-U | 5 ea  |
| Inlet Liner, Straight Through, 2 mm I. D.                     | 2631105   | 5 ea  |
| Therm-O-Ring, 1/4 in.   | 21003-U   | 10 ea |
| M-2A Long Capillary Ferrules, 0.25 mm Column                  | 24826-U   | 10 ea |
| Column Nut for PerkinElmer                                    | 28034-U   | 5 ea  |

### Varian® GCs

| Description   | Cat. No.  | Pkg   |
|---|-----------|-------|
| Thermogreen LB-2 Septa, 9.0 mm  | 28021-U   | 50 ea |
| Molded Thermogreen LB-2 Septa, 11 mm, with injection hole                               | 28336-U   | 50 ea |
| Inlet Liner, FocusLiner, Single Taper, Wool Packed, 3.4 mm I.D. for 1078/1079 injectors | 2875705-U | 5 ea  |
| Inlet Liner, SPME, 0.75 mm I.D., for CP-1177 Injector                                   | 2637505   | 5 ea  |
| M-2A Long Capillary Ferrules, 0.25 mm Column  | 24826-U   | 10 ea |
| Column Nut for Varian   | 28033-U   | 1 ea  |

## Septa

### Molded Thermogreen LB-2 Septa



Molded Thermogreen LB-2 septa are manufactured from high quality, low bleed material using the same exclusive rubber formulation as the popular Thermogreen LB-2 septa. Therefore, they exhibit the same traits. The difference is that molded septa, unlike traditional die cut septa, offer easier installation and also provide a better seal inside the injection port. With our liquid injection molding process, every septum conforms to the same shape with crisp, clean sides. Because these are molded, injection holes can be incorporated into the septa. An injection hole allows needle penetration through the same location, time after time. This helps reduce septum coring, and prevents septum fragments from entering the injection port, while still giving a low bleed, leak free injection system.

- Rubber formulation exclusive to Supelco
- Strict tolerances (diameter, thickness) due to the constant dimensions of the mold itself, resulting in easier installation and better sealing
- Strict tolerances of injection hole (centering, size, and depth) resulting in long life due to minimal coring
- Ultra low bleed over a wide range of inlet temperatures (100 °C to 350 °C)
- No foreign substances or powders (which could contaminate the inlet) are used during manufacturing
- Fully tested for bleed and contamination
- Easier needle penetration and high puncture tolerance, ideal for autosamplers
- Already conditioned, ready-to-use
- Ideal for use with low bleed GC-MS columns
- Version without injection hole designed for customers who do not use autosamplers
- Version with injection hole designed for customers who use autosamplers and/or solid phase microextraction (SPME)

| Description                 | Cat. No. | Pkg    |
|-----------------------------|----------|--------|
| 9.5 mm                      | 28670-U  | 50 ea  |
| 9.5 mm                      | 28671-U  | 250 ea |
| 9.5 mm, with injection hole | 28331-U  | 50 ea  |
| 9.5 mm, with injection hole | 28332-U  | 250 ea |
| 10 mm                       | 28673-U  | 50 ea  |
| 10 mm                       | 28675-U  | 250 ea |
| 10 mm, with injection hole  | 28333-U  | 50 ea  |
| 10 mm, with injection hole  | 28334-U  | 250 ea |
| 11 mm                       | 28676-U  | 50 ea  |
| 11 mm                       | 28678-U  | 250 ea |
| 11 mm, with injection hole  | 28336-U  | 50 ea  |
| 11 mm, with injection hole  | 28338-U  | 250 ea |

### Thermogreen LB-2 Septa



We test every lot of Thermogreen LB-2 septa, to ensure low bleed and high puncture tolerance. We also condition these septa – they are ready-to-use, right from the container. Popular dimensions are listed below. Other dimensions can be found in our catalog and on our web site.

- Formulation exclusive to Supelco
- Extremely low bleed over a wide range of inlet temperatures (100 °C to 350 °C)
- Already conditioned, ready-to-use
- Easy needle penetration and high puncture tolerance, ideal for autosamplers

| Description         | Cat. No. | Pkg     |
|---------------------|----------|---------|
| 9.0 mm              | 28021-U  | 50 ea   |
| 9.5 mm              | 20652    | 50 ea   |
| 9.5 mm              | 20666    | 250 ea  |
| 10 mm               | 20653-U  | 50 ea   |
| 10 mm               | 23156    | 250 ea  |
| 11 mm               | 20654    | 50 ea   |
| 11 mm               | 23163    | 250 ea  |
| 11 mm               | 23164    | 1000 ea |
| 11.5 mm             | 23154    | 50 ea   |
| 17 mm               | 23159    | 50 ea   |
| Plug (for Shimadzu) | 20608    | 10 ea   |
| Plug (for Shimadzu) | 20633    | 50 ea   |

### Merlin Microseal™ System Kits

The Merlin Microseal system incorporates a unique design with two sequential seals that provide long septum life. The patented design is a replacement for the standard septum and septum nut in a capillary inlet system. Popular kits are listed below. Kit components can be found in our catalog and on our web site.

- Sustain many injections without leaks or septum fragments
- For use with 23 gauge blunt tipped needles
- Ideal for use with an SPME device with a 23 gauge needle
- These kits include all necessary items for initial installation

| Description  | Max. Pressure | Cat. No. |
|--|---------------|----------|
| For Agilent 5890/6890/7890 GCs                         | 30 psi        | 22584    |
| For Agilent 5890/6890/7890 GCs                         | 100 psi       | 24815-U  |
| For Varian 3400/3800 GCs with 1077/1078/1079 Injectors | 100 psi       | 24817-U  |
| For Varian 3800 GCs with CP-1177 Injector              | 100 psi       | 22609-U  |



technical service: 800-359-3041 (US and Canada only) / 814-359-3041

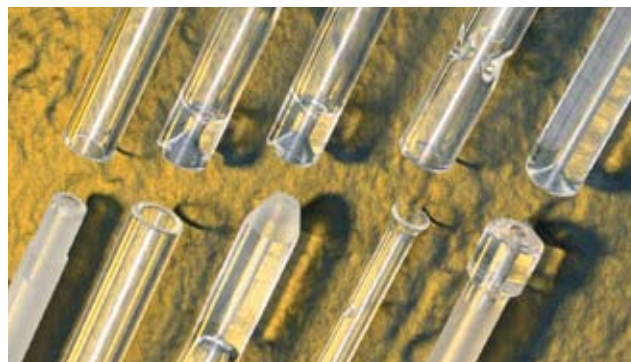
ordering: 800-247-6628 (US only) / 814-359-3441

# Liners and Seals

## Inlet Liners

A regular schedule of inlet liner replacement as part of a preventative maintenance routine will help prevent adsorption problems that can drastically affect chromatography if left unchecked. Inlet liners should be highly inert and manufactured to the strictest of tolerances. Supelco is recognized as a leader in the manufacturing of high quality inlet liners. Popular inlet liner dimensions are listed below. Other inlet liners can be found in our catalog and on our web site.

- Proprietary high temperature silanization (exclusively from Supelco) ensures inertness
- Our in-house glass shop ensures consistent dimensions that meet, or exceed, GC manufacturers' strict tolerances
- Inlet liners that are packed use a high-quality glass wool, deactivated using a proprietary silanization process (exclusively from Supelco)



P000179

| Description   | Cat. No.  | Pkg  |
|---|-----------|------|
| <b>For Agilent 5890/6890/7890 (78.5 mm length x 6.3 mm O.D.)</b>          |           |      |
| Split with cup, 4 mm I.D., unpacked                                       | 2051005   | 5 ea |
| Split with cup, 4 mm I.D., wool packed                                    | 2048205   | 5 ea |
| Split straight through, 4 mm I.D., unpacked                               | 2879405-U | 5 ea |
| Split straight through, 4 mm I.D., wool packed                            | 2048605   | 5 ea |
| Splitless with single taper, 4 mm I.D., unpacked                          | 2046605   | 5 ea |
| Splitless with single taper, 4 mm I.D., wool packed                       | 2047805   | 5 ea |
| Splitless with dual taper, 4 mm I.D., unpacked                            | 2048505   | 5 ea |
| Splitless straight through, 2 mm I.D., unpacked                           | 2051305   | 5 ea |
| Splitless straight through, 1.5 mm I.D., unpacked                         | 2051705   | 5 ea |
| SPME, 0.75 mm I.D., unpacked  | 2637505   | 5 ea |
| <b>For Finnigan</b>   |           |      |
| Same catalog numbers as Agilent   |           |      |
| <b>For PerkinElmer AutoSystem and Clarus (92 mm length x 6.3 mm O.D.)</b> |           |      |
| Split, 4 mm I.D., unpacked  | 2630905   | 5 ea |
| Split, 4 mm I.D., wool packed   | 2631005   | 5 ea |
| Splitless straight through, 2 mm I.D., unpacked                           | 2631105   | 5 ea |
| SPME, 0.75 mm I.D., unpacked  | 2631205   | 5 ea |
| <b>For Shimadzu® 17A with SPL-17 Injector (95 mm length x 5 mm O.D.)</b>  |           |      |
| Split, 3.4 mm I.D., unpacked  | 2633605   | 5 ea |
| Split, 3.4 mm I.D., wool packed   | 2632705   | 5 ea |
| Splitless with middle gooseneck, 3.4 mm I.D., unpacked                    | 2878305-U | 5 ea |
| Splitless with recessed gooseneck, 3.4 mm I.D., wool packed               | 2877905-U | 5 ea |
| Splitless straight through, 2.6 mm I.D., unpacked                         | 2633705   | 5 ea |
| SPME, 0.75 mm I.D., unpacked  | 2633905   | 5 ea |

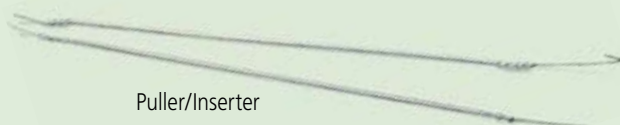
| Description  | Cat. No.  | Pkg  |
|--|-----------|------|
| <b>For Thermo® ThermoQuest 8000/TRACE® (105 mm length x 8 mm O.D.)</b> |           |      |
| Split, 5 mm I.D., unpacked   | 2877105-U | 5 ea |
| Split, 3 mm I.D., unpacked   | 2876705-U | 5 ea |
| Splitless with single taper, 5 mm I.D., unpacked                       | 2877305-U | 5 ea |
| Splitless with single taper, 3 mm I.D., unpacked                       | 2877405-U | 5 ea |
| SPME, 0.8 mm I.D., unpacked  | 2876605-U | 5 ea |
| <b>For Varian 1075/1077 Injectors (72 mm length x 6.3 mm O.D.)</b>     |           |      |
| Split with baffle, 4 mm I.D., unpacked                                 | 2050105   | 5 ea |
| Split with cup, 4 mm I.D., unpacked                                    | 2049805   | 5 ea |
| Split, 4 mm I.D., unpacked   | 2636105   | 5 ea |
| Split, 4 mm I.D., wool packed  | 2636005   | 5 ea |
| Splitless, 2 mm I.D., unpacked   | 2050205   | 5 ea |
| SPME, 0.75 mm I.D., unpacked   | 2635805   | 5 ea |
| <b>For Varian 1078/1079 Injectors (54 mm length x 5 mm O.D.)</b>       |           |      |
| Split, 3.4 mm I.D., unpacked   | 2637105   | 5 ea |
| Split, 3.4 mm I.D., wool packed  | 2637305   | 5 ea |
| Splitless, 2 mm I.D., unpacked   | 2637405   | 5 ea |
| Splitless, 2 mm I.D., wool packed                                      | 2637705   | 5 ea |
| SPME, 0.8 mm I.D., unpacked  | 2637805   | 5 ea |
| <b>For Varian CP-1177 Injectors</b>                                    |           |      |
| Same catalog numbers as Agilent  |           |      |

## Glass Wool

Glass wool is a fine pliable untreated glass fiber. Silanized glass wool and Pesticide Grade glass wool undergo a proprietary deactivation process to remove active sites that may interfere with an analysis.



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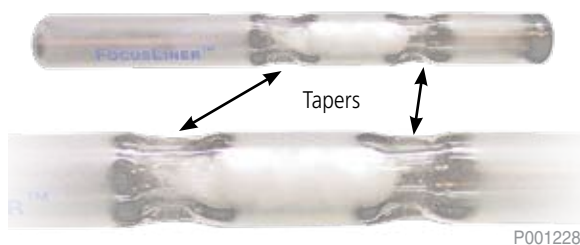
Puller/Inserter

E000812

- Maximum temperature 400 °C
- Silanized – use where minimal activity is required
- Pesticide Grade – use in the analysis of pesticides
- Phosphoric Acid Treated – use in the analysis of free acids, phenols, and glycols
- Puller/Inserter – easily inserts or removes glass wool plugs

| Description             | Cat. No. | Pkg  |
|-------------------------|----------|------|
| Silanized               | 20411    | 50 g |
| Pesticide Grade         | 20409    | 10 g |
| Phosphoric Acid Treated | 20383    | 50 g |
| Puller/Inserter Tool    | 22406    | 2 ea |

## FocusLiner Inlet Liners



The use of a wool plug in inlet liners has been used for many years to promote the rapid vaporization of the entire sample, minimize mass discrimination, and prevent non-volatile material from entering the column. FocusLiner inlet liners incorporate a unique design that prevents shifting of the wool plug during repeated injections or sudden inlet pressure changes. Popular FocusLiner inlet liners are listed below. Other inlet liners can be found in our catalog and on our web site.

- Tapers inside the liner stabilize the position of the wool plug, the wool plug is always correctly located
- Unique design prevents shifting of the wool plug during repeated injections or sudden inlet pressure changes
- Large surface area for maximum sample vaporization
- Wiping action removes residual liquid sample from the needle tip, thus preventing droplet formation
- Reduced solvent tailing
- Lower mass discrimination during split injections
- Typically reduces injection variability by at least 96%
- Provide maximum sensitivity and improved detection levels
- High temperature deactivated glass
- Guaranteed to fit

| Description   | Cat. No.  | Pkg  |
|---|-----------|------|
| <b>For Agilent 5890/6890/7890 (78.5 mm length x 6.3 mm O.D.)</b>          |           |      |
| Split/splitless, 4 mm I.D., wool packed                                   | 2879805-U | 5 ea |
| Split/splitless, 2.3 mm I.D., wool packed                                 | 2879605-U | 5 ea |
| Split/splitless with single taper, 4 mm I.D., wool packed                 | 2879905-U | 5 ea |
| Split/splitless with single taper, 2.3 mm I.D., wool packed               | 2879505-U | 5 ea |
| <b>For Finnigan</b>   |           |      |
| Same catalog numbers as Agilent   |           |      |
| <b>For PerkinElmer AutoSystem and Clarus (92 mm length x 6.3 mm O.D.)</b> |           |      |
| Split/splitless, 4 mm I.D., wool packed                                   | 2879205-U | 5 ea |
| Split/splitless with single taper, 4 mm I.D., wool packed                 | 2879105-U | 5 ea |
| <b>For Shimadzu 17A with SPL-17 Injector (95 mm length x 5 mm O.D.)</b>   |           |      |
| Split/splitless, 3.4 mm I.D., wool packed                                 | 2878605-U | 5 ea |
| Split/splitless with single taper, 3.4 mm I.D., wool packed               | 2878405-U | 5 ea |
| <b>For Thermo ThermoQuest 8000/TRACE (105 mm length x 8 mm O.D.)</b>      |           |      |
| Split, 5 mm I.D., wool packed (for use with 50 mm needles)                | 2877005-U | 5 ea |
| Splitless, 5 mm I.D., wool packed (for use with 70 mm needles)            | 2877205-U | 5 ea |
| Splitless with single taper, 5 mm I.D., wool packed                       | 2877505-U | 5 ea |
| <b>For Varian 1075/1077 Injectors (72 mm length x 6.3 mm O.D.)</b>        |           |      |
| Split, 4 mm I.D., wool packed   | 2875405-U | 5 ea |
| Split with single taper, 4 mm I.D., wool packed                           | 2874805-U | 5 ea |
| Split, 2.3 mm I.D., wool packed   | 2874705-U | 5 ea |
| <b>For Varian 1078/1079 Injectors (54 mm length x 5 mm O.D.)</b>          |           |      |
| Split/splitless with single taper, 3.4 mm I.D., wool packed               | 2875705-U | 5 ea |
| Split/splitless with dual taper, 3.4 mm I.D., wool packed                 | 2875505-U | 5 ea |
| <b>For Varian CP-1177 Injectors</b>                                       |           |      |
| Same catalog numbers as Agilent   |           |      |

## Therm-O-Ring Seals

Inlet liners used in an Agilent GC require an O-ring placed near the top for proper operation. This O-ring ensures that the only path for carrier gas to get to the outside of the inlet liner is through the grooves in the inlet seal at the bottom of the injection port.

- Available exclusively from Supelco
- Fit 6.3 mm, 6.5 mm, or 1/4" O.D. capillary liners that use an O-ring seal
- Can be used with inlet temperatures up to 375 °C without sticking or fragmenting
- Superior replacements for O-rings made from Viton™

| Description       | Cat. No. | Pkg   |
|-------------------|----------|-------|
| Therm-O-Ring Seal | 21003-U  | 10 ea |
| Therm-O-Ring Seal | 21004-U  | 25 ea |



## Inlet Seals

The inlet seals in an Agilent GC must be regularly changed to prevent sample adsorption due to accumulation of sample residue and/or septum fragments. Supelco offers replacement inlet seals of the highest quality.

- Stainless steel for analyses of non-reactive compounds
- Pure gold plating for applications requiring more inertness
- No brighteners used in the plating process
- Cross design intended for high split flows (>200 mL/min.)
- Packs of two or ten include one washer for each seal
- Packs of 100 include 50 washers

| Description               | Cat. No. | Pkg    |
|---------------------------|----------|--------|
| Non-plated                | 23316-U  | 2 ea   |
|                           | 23317-U  | 10 ea  |
|                           | 23363-U  | 100 ea |
| Gold-plated               | 23318-U  | 2 ea   |
|                           | 23319-U  | 10 ea  |
| Gold-plated, cross design | 23413-U  | 2 ea   |
|                           | 23415-U  | 10 ea  |

technical service: 800-359-3041 (US and Canada only) / 814-359-3041

ordering: 800-247-6628 (US only) / 814-359-3441

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Liners and Seals

## Ferrules and Nuts

GC ferrules should provide a leak-tight seal, accommodate column O.D. variations, seal with minimum torque, and not stick to the column or fittings. Additionally, they should be resilient enough to maintain their seal when column temperature and corresponding back pressure increases. Three popular ferrule compositions that meet these requirements are listed below. Ferrules of other compositions and/or with other internal diameters can be found in our catalog and on our web site.

### Supeltex™ M-2A Ferrules

- Max. Temp.: 400 °C
- Composition: VESPEL® SP-21 (85% polyimide/15% graphite)
- Characteristics: Seal at 1/4-turn past fingertight.
- Benefits: High reusability. Won't stick to metal or glass. Form leaktight seals without sticking to the column. Do not require back ferrules.

### Supeltex M-4 Ferrules

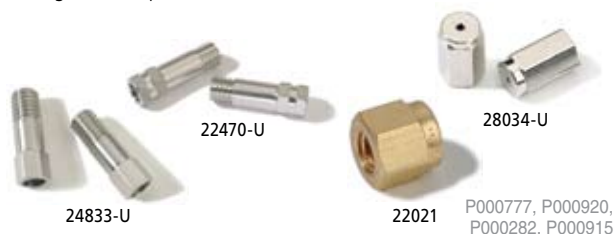
- Max. Temp.: 450 °C
- Composition: Flexible graphite
- Characteristics: Seal at 1/4-turn past fingertight.
- Benefits: An improved design that offers a clean, sharp profile with minimal flash. Maximum sealing surface contact. Reduced risk of column contamination at installation.

### CapSeal Bullet™ Ferrules

- Available exclusively from Supelco
- Max. Temp.: 450 °C
- Composition: Graphite material captured in aluminum base
- Characteristics: Seal at 1/8-turn past fingertight.
- Benefits: Reusable. A special end taper reduces graphite extrusion into fitting. Aluminum base keeps the ferrule from adhering to the fitting, making it easy to remove.

### Column Nuts

Improper nut/ferrule combinations create dead volume (empty space between the ferrule and the injection port that is not swept by carrier gas). This may result in poor chromatography, as evidenced by fronting peaks and band broadening. Ensure that your chromatography is the best it can be by always using the proper nut/ferrule combination. For assistance in determining the correct nut/ferrule combination, contact Supelco Technical Service at 800-359-3041 (US and Canada only), 814-359-3041, or e-mail [techservice@sial.com](mailto:techservice@sial.com). We offer the following replacements for damaged or misplaced nuts.



### Ferrule Designs

#### Short design ferrules fit:

- The original nuts that ship with Agilent GCs

#### Long design ferrules fit:

- MSD source nuts for Agilent GCs
- The original nuts that ship with PerkinElmer GCs
- The original nuts that ship with Varian GCs

#### General purpose ferrules fit:

- Supelco Ferrule Nut Adapters for Agilent GCs
- 1/16 inch compression nuts for PerkinElmer GCs



### Ferrules

| Column I.D.                            | Ferrule I.D. | Cat. No. | Pkg   |
|--|--------------|----------|-------|
| <b>Supeltex M-2A, Short Design</b>     |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 24803-U  | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 24807-U  | 50 ea |
| <b>Supeltex M-4, Short Design</b>      |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 24811-U  | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 24819-U  | 50 ea |
| <b>CapSeal Bullet, Short Design</b>    |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 23864    | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 23867    | 50 ea |
| <b>Supeltex M-2A, Long Design</b>      |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 24826-U  | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 28022-U  | 50 ea |
| <b>Supeltex M-4, Long Design</b>       |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 28025-U  | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 28028-U  | 50 ea |
| <b>CapSeal Bullet, Long Design</b>     |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 23488    | 12 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 23493    | 48 ea |
| <b>Supeltex M-2A, General Purpose</b>  |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 503258   | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 22474    | 50 ea |
| <b>Supeltex M-4, General Purpose</b>   |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 22498    | 10 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 22480-U  | 50 ea |
| <b>CapSeal Bullet, General Purpose</b> |              |          |       |
| 0.10-0.25 mm                           | 0.4 mm       | 23480-U  | 12 ea |
| 0.10-0.25 mm                           | 0.4 mm       | 23485    | 48 ea |

### Column Nuts

| Description                 | Ferrules Used   | Cat. No. | Pkg   |
|-----------------------------|-----------------|----------|-------|
| Agilent nut                 | Short design    | 24833-U  | 2 ea  |
| Supelco ferrule nut adapter | General purpose | 22470-U  | 2 ea  |
| Agilent MSD source nut      | Long design     | 28034-U  | 5 ea  |
| PerkinElmer nut             | Long design     | 28034-U  | 5 ea  |
| 1/16 inch compression nut   | General purpose | 22021    | 10 ea |
| Varian nut                  | Long design     | 28033-U  | 1 ea  |

# Guard Columns and Connectors

## Fused Silica Guard Columns



For use as guard columns to protect analytical columns from damaging sample components. Match the deactivation of the tubing with the polarity of the injection solvent.

| Deactivation          | Injection Solvents                       | Max. Temp. |
|-----------------------|--|------------|
| Non-Polar             | Alkanes<br>Carbon disulfide<br>Ethers    | 360 °C     |
| Intermediate Polarity | Acetone<br>Methylene chloride<br>Toluene | 360 °C     |
| Polar                 | Acetonitrile<br>Methanol<br>Water        | 260 °C     |

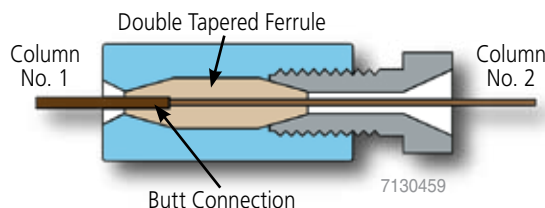
| Length (m)                                | I.D. (mm) | Cat. No. |
|---|-----------|----------|
| <b>Non-Polar Deactivation</b>             |           |          |
| 3   | 0.25      | 25722    |
| 5   | 0.25      | 25742    |
| 3   | 0.32      | 25723    |
| 5   | 0.32      | 25743    |
| <b>Intermediate Polarity Deactivation</b> |           |          |
| 3   | 0.25      | 25727    |
| 5   | 0.25      | 25747    |
| 3   | 0.32      | 25728    |
| 5   | 0.32      | 25748-U  |
| <b>Polar Deactivation</b>                 |           |          |
| 5   | 0.32      | 25752-U  |

### Fused Silica Tubing Inner/Outer Diameters

| Tubing I.D. | Tubing I.D. Range | Tubing O.D. Range |
|-------------|-------------------|-------------------|
| 0.10 mm (1) | 0.094 – 0.106 mm  | 0.348 – 0.370 mm  |
| 0.10 mm (2) | 0.094 – 0.106 mm  | 0.285 – 0.315 mm  |
| 0.20 mm     | 0.194 – 0.206 mm  | 0.345 – 0.375 mm  |
| 0.25 mm     | 0.244 – 0.256 mm  | 0.345 – 0.375 mm  |
| 0.32 mm     | 0.312 – 0.328 mm  | 0.425 – 0.455 mm  |
| 0.53 mm     | 0.523 – 0.551 mm  | 0.650 – 0.690 mm  |
| 0.75 mm     | 0.742 – 0.758 mm  | 0.875 – 0.925 mm  |

(1) Columns with non-polar or intermediate polarity stationary phases.  
(2) Columns with polar stationary phases.

## Capillary Column Butt Connector



This device consists of a double-tapered ferrule and a stainless steel compression housing with a threaded cap. Small and light (2.3 cm x 0.6 cm, 4.4 g with ferrule), it provides a gas tight seal with zero dead volume. This unit maintains inertness with no change in column efficiency.

| Description   | Cat. No. |
|---|----------|
| Capillary Column Butt Connector, body only                  | 23804    |
| <b>Supeltex M-2B Ferrules, pack of 2, Max. Temp. 350 °C</b> |          |
| To connect 0.20/0.25 mm I.D. to 0.20/0.25 mm I.D.           | 22453    |
| To connect 0.32 mm I.D. to 0.32 mm I.D.                     | 22454    |
| To connect 0.53 mm I.D. to 0.53 mm I.D.                     | 22591    |
| To connect 0.20/0.25 mm I.D. to 0.53 mm I.D.                | 22455-U  |
| To connect 0.32 mm I.D. to 0.53 mm I.D.                     | 22586    |

## GlasSeal™ Capillary Column Connectors

Use a GlasSeal connector to attach a guard column to an analytical column or to repair a column which has broken.

Use a GlasSeal "Y" connector to split a sample to two columns for confirmatory analysis. Silanized for an inert inside surface, these can be used with our 0.10-0.53 mm I.D. tubing. To make this an extremely durable connection, use a small drop of polyimide sealing resin (cure at 200 °C, maximum temperature 350 °C).



| Description                      | Cat. No. | Pkg   |
|----------------------------------|----------|-------|
| Borosilicate Glass Connector     | 20479    | 12 ea |
| Fused Silica Connector           | 23627    | 5 ea  |
| Fused Silica Connector           | 23628    | 25 ea |
| Borosilicate Glass "Y" Connector | 20480    | 1 ea  |
| Fused Silica "Y" Connector       | 23631    | 1 ea  |
| Fused Silica "Y" Connector       | 23632    | 3 ea  |
| Polyimide Sealing Resin          | 23817    | 5 g   |

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Guard Columns  
and Connectors

SUPELCO

## Flow Meters

Chromatographers should routinely measure gas flow as part of a preventative maintenance schedule. Discovering and resolving potential issues before they become problems can eliminate costly downtime while troubleshooting the problem's source. While traditional bubble flow meters can be used for this task, newer electronic or digital flow meters are able to perform this task with greater ease. Bubble flow meters are still available, and can be found in our catalog and on our web site.

### Veri-Flow 500 Electronic Flow Meters

- Continuous-reading in volume (mL/min.), linear velocity (cm/sec), or split ratio
- Unaffected by temperature or pressure changes
- Multiple-point calibrated to NIST-certified volumetric standards for hydrogen, helium, nitrogen, air, and 5% argon/methane (certificate supplied)
- Superior accuracy helps in complying with ISO 9000, GLP, and other quality control protocols
- Include internal, rechargeable batteries and charger



### Optiflow Digital Flow Meters

- Provides a reliable means of measuring gas flow
- Automates the 'positive displacement' technique, which works independent of the type, mass, or mixture of gas being measured
- Can be used with all gases
- Combines the simplicity and versatility of a bubble meter with the speed and accuracy of a microprocessor
- Optical sensors respond more accurately to the passage of a bubble
- Features an easy to read, accurate digital display, eliminating the need for tedious bubble watching, timing, and flow rate/time conversions
- Requires a 9 volt battery for operation



| Description                                 | Flow Range      | Cat. No. |
|---|-----------------|----------|
| <b>Veri-Flow 500 Electronic Flow Meters</b> |                 |          |
| Model 500, 110 V                            | 1-500 mL/min.   | 23143    |
| Model 500, 230 V                            | 1-500 mL/min.   | 23142    |
| <b>Optiflow Digital Flow Meters</b>         |                 |          |
| Model 420                                   | 0.5-50 mL/min.  | 22806    |
| Model 570                                   | 0.5-700 mL/min. | 22741-U  |
| Model 650                                   | 5-5000 mL/min.  | 22912    |

## Hand Tools

We offer a variety of hand tools that have been specifically designed to assist the chromatographer in the installation and maintenance associated with gas chromatography.



P000911



22435-U

P000437

20352

20353

23820-U

P000172

23536

P000302

23814

P000913

22434

P000438

23626

23139

E000958

P000309

| Description                                | Cat. No. |
|--|----------|
| Capillary Starter Kit                      | 23639    |
| Hook Septum Puller                         | 20352    |
| Screw Septum Puller                        | 20353    |
| Stainless Steel Forceps                    | 22435-U  |
| Pin Vise Drill Kit                         | 23820-U  |
| Capillary Cleaving Tool, retractable blade | 23814    |
| Coddington Magnifier, 20X                  | 23139    |
| Lenscope Illuminated Magnifier, 10X        | 23135    |
| Mirror with Rotating Head                  | 22434    |
| Solvent Rinse Kit                          | 23626    |
| Split Vent Trap                            | 22536    |

Maximize Performance!

sigma-aldrich.com/gc

# GC Autosampler Syringes



The syringe is the interface between the sample and the chromatograph. Rapid and precise injection requires a tight fit of the syringe in the autosampler. Supelco carries two brands of top-quality autosampler syringes, Hamilton® and SGE.

- 23s gauge needles – for standard injections
- 26s gauge needles – for on-column and split/splitless injection
- 23s-26s dual gauge needles perform all applications without the need to change syringes
- Available with fixed needle or removable needle

| Manufacturer Model Number | Volume | Needle Length in. / mm | Gauge | OD mm | Point Style | Manufacturer Part No. | Pkg. Size | Cat. No. |
|---------------------------|--------|------------------------|-------|-------|-------------|-----------------------|-----------|----------|
|---------------------------|--------|------------------------|-------|-------|-------------|-----------------------|-----------|----------|

## Agilent

### 7673, 7683 and 6850

### Hamilton

#### Modified Microliter Syringes - Removable Needle

|            |        |         |     |      |      |       |   |       |
|------------|--------|---------|-----|------|------|-------|---|-------|
| 7000.5ASRN | 0.5 µL | 1.71/43 | 23s | 0.64 | Cone | 86276 | 1 | 26214 |
| 7000.5ASRN | 0.5 µL | 1.71/43 | 26s | 0.47 | Cone | 86274 | 1 | 26215 |
| 7001ASRN   | 1 µL   | 1.71/43 | 23s | 0.64 | Cone | 80176 | 1 | 26216 |
| 7001ASRN   | 1 µL   | 1.71/43 | 26s | 0.47 | Cone | 80175 | 1 | 26217 |

#### Microliter Syringes - Fixed Needle

|        |            |         |         |           |       |       |   |         |
|--------|------------|---------|---------|-----------|-------|-------|---|---------|
| 75ASN  | 5 µL       | 1.71/43 | 23s     | 0.64      | Cone  | 87987 | 1 | 21311   |
| 75ASN  | 5 µL       | 1.71/43 | 26s     | 0.47      | Cone  | 87988 | 1 | 21310-U |
| 75ASN  | 5 µL       | 1.71/43 | 23s-26s | 0.64-0.47 | Cone  | 87993 | 1 | 24570-U |
| 75ASN  | 5 µL 6/pk  | 1.71/43 | 23s     | 0.64      | Cone  | 87990 | 6 | 21315   |
| 75ASN  | 5 µL 6/pk  | 1.71/43 | 26s     | 0.47      | Cone  | 87989 | 6 | 21314   |
| 75ASN  | 5 µL 6/pk  | 1.71/43 | 23s-26s | 0.64-0.47 | Cone  | 87994 | 6 | 24571   |
| 75ASN  | 5 µL       | 1.71/43 | 23s     | 0.64      | Bevel | 87991 | 1 | 26714   |
| 75ASN  | 5 µL       | 1.71/43 | 26s     | 0.47      | Bevel | 87992 | 1 | 26721   |
| 701ASN | 10 µL      | 1.71/43 | 23s     | 0.64      | Cone  | 80387 | 1 | 21313   |
| 701ASN | 10 µL      | 1.71/43 | 26s     | 0.47      | Cone  | 80388 | 1 | 21312   |
| 701ASN | 10 µL      | 1.71/43 | 23s-26s | 0.64-0.47 | Cone  | 80393 | 1 | 24573   |
| 701ASN | 10 µL 6/pk | 1.71/43 | 23s     | 0.64      | Cone  | 80390 | 6 | 21317   |
| 701ASN | 10 µL 6/pk | 1.71/43 | 26s     | 0.47      | Cone  | 80389 | 6 | 21316   |
| 701ASN | 10 µL 6/pk | 1.71/43 | 23s-26s | 0.64-0.47 | Cone  | 80391 | 6 | 24574   |
| 701ASN | 10 µL      | 1.71/43 | 23s     | 0.64      | Bevel | 80398 | 1 | 26715   |
| 701ASN | 10 µL      | 1.71/43 | 26s     | 0.47      | Bevel | 80399 | 1 | 26722   |

#### Microliter Syringes - Removable Needle

|         |       |         |         |           |      |       |   |         |
|---------|-------|---------|---------|-----------|------|-------|---|---------|
| 75ASRN  | 5 µL  | 1.71/43 | 23s     | 0.64      | Cone | 87957 | 1 | 21321   |
| 75ASRN  | 5 µL  | 1.71/43 | 26s     | 0.47      | Cone | 87958 | 1 | 21320-U |
| 75ASRN  | 5 µL  | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 87959 | 1 | 24572   |
| 701ASRN | 10 µL | 1.71/43 | 23s     | 0.64      | Cone | 80357 | 1 | 21323-U |
| 701ASRN | 10 µL | 1.71/43 | 26s     | 0.47      | Cone | 80358 | 1 | 21322-U |
| 701ASRN | 10 µL | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 80359 | 1 | 24575   |

#### Gastight Syringes - Fixed Needle

|      |            |         |         |           |      |       |   |         |
|------|------------|---------|---------|-----------|------|-------|---|---------|
| 175  | 5 µL       | 1.71/43 | 23s     | 0.64      | Cone | 80074 | 1 | 26716   |
| 175  | 5 µL 6/pk  | 1.71/43 | 23s     | 0.64      | Cone | 80090 | 6 | 26700-U |
| 175  | 5 µL 6/pk  | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 80092 | 6 | 24577   |
| 1701 | 10 µL      | 1.71/43 | 23s     | 0.64      | Cone | 80080 | 1 | 26719   |
| 1701 | 10 µL      | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 80079 | 1 | 24579   |
| 1701 | 10 µL 6/pk | 1.71/43 | 23s     | 0.64      | Cone | 80094 | 6 | 26701   |
| 1701 | 10 µL 6/pk | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 80096 | 6 | 24580   |

#### Gastight Syringes - Removable Needle

|      |       |         |         |           |      |       |   |         |
|------|-------|---------|---------|-----------|------|-------|---|---------|
| 175  | 5 µL  | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 80086 | 1 | 24578   |
| 1701 | 10 µL | 1.71/43 | 23s     | 0.64      | Cone | 80087 | 1 | 21325-U |
| 1701 | 10 µL | 1.71/43 | 26s     | 0.47      | Cone | 80088 | 1 | 21324   |
| 1701 | 10 µL | 1.71/43 | 23s-26s | 0.64-0.47 | Cone | 80089 | 1 | 24581   |

### SGE

#### Fixed Needle

|                |       |         |    |      |      |        |   |       |
|----------------|-------|---------|----|------|------|--------|---|-------|
| SK-5F-HP-0.47  | 5 µL  | 1.65/42 | 26 | 0.47 | Cone | 001804 | 6 | 21910 |
| 5F-HP-0.63     | 5 µL  | 1.65/42 | 23 | 0.63 | Cone | 001810 | 1 | 21542 |
| SK-5F-HP-0.63  | 5 µL  | 1.65/42 | 23 | 0.63 | Cone | 001814 | 6 | 21911 |
| 10F-HP-0.47    | 10 µL | 1.65/42 | 26 | 0.47 | Cone | 002800 | 1 | 21541 |
| SK-10F-HP-0.47 | 10 µL | 1.65/42 | 26 | 0.47 | Cone | 002804 | 6 | 21912 |
| 10F-HP-0.63    | 10 µL | 1.65/42 | 23 | 0.63 | Cone | 002810 | 1 | 21543 |
| SK-10F-HP-0.63 | 10 µL | 1.65/42 | 23 | 0.63 | Cone | 002814 | 6 | 21544 |

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GC Autosampler Syringes

SUPELCO

| Manufacturer Model Number | Volume | Needle Length in. / mm | Gauge | OD mm | Point Style | Manufacturer Part No. | Pkg. Size | Cat. No. |
|---------------------------|--------|------------------------|-------|-------|-------------|-----------------------|-----------|----------|
|---------------------------|--------|------------------------|-------|-------|-------------|-----------------------|-----------|----------|

## Agilent

### 7673, 7683 and 6850 (contd.)

#### SGE (contd.)

##### Fixed Needle - Dual Gauge

|                  |       |         |       |           |      |        |   |         |
|------------------|-------|---------|-------|-----------|------|--------|---|---------|
| 5F-HP-0.63/0.47  | 5 µL  | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 001822 | 6 | 26887-U |
| 10F-HP-0.63/0.47 | 10 µL | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 002822 | 6 | 26889-U |

##### Removable Needle

|               |        |         |    |      |      |        |   |        |
|---------------|--------|---------|----|------|------|--------|---|--------|
| 0.5BR-HP-0.47 | 0.5 µL | 1.65/42 | 26 | 0.47 | Cone | 000400 | 1 | 24402  |
| 0.5BR-HP-0.63 | 0.5 µL | 1.65/42 | 23 | 0.63 | Cone | 000410 | 1 | 24403  |
| 5R-HP-0.47    | 5 µL   | 1.65/42 | 26 | 0.47 | Cone | 001805 | 1 | 23963  |
| 5R-HP-0.63    | 5 µL   | 1.65/42 | 23 | 0.63 | Cone | 001815 | 1 | 23962  |
| 10R-HP-0.47   | 10 µL  | 1.65/42 | 26 | 0.47 | Cone | 002805 | 1 | 24417  |
| 10R-HP-0.63   | 10 µL  | 1.65/42 | 23 | 0.63 | Cone | 002815 | 1 | 24416  |
| 25R-HP-0.63   | 25 µL  | 1.65/42 | 23 | 0.63 | Cone | 003865 | 1 | 509701 |

##### Removable Needle - Flexible Plunger

|              |       |         |    |      |      |        |   |       |
|--------------|-------|---------|----|------|------|--------|---|-------|
| 10RX-HP-0.47 | 10 µL | 1.65/42 | 26 | 0.47 | Cone | 002844 | 1 | 23959 |
| 10RX-HP-0.63 | 10 µL | 1.65/42 | 23 | 0.63 | Cone | 002845 | 1 | 23958 |

##### Gas Tight - Fixed Needle

|                |       |         |    |      |      |        |   |        |
|----------------|-------|---------|----|------|------|--------|---|--------|
| 10R-HP-GT-0.47 | 10 µL | 1.65/42 | 26 | 0.47 | Cone | 002817 | 1 | 509671 |
|----------------|-------|---------|----|------|------|--------|---|--------|

##### Gas Tight - Fixed Needle, Dual Gauge

|                        |        |         |       |           |      |        |   |         |
|------------------------|--------|---------|-------|-----------|------|--------|---|---------|
| 10F-HP-GT-0.63/0.47    | 10 µL  | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 002826 | 1 | 26890-U |
| SK-10F-HP-GT-0.63/0.47 | 10 µL  | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 002827 | 6 | 26891-U |
| 25F-HP-GT-0.63/0.47    | 25 µL  | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 003668 | 1 | 26892-U |
| 50F-HP-GT-0.63/0.47    | 50 µL  | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 004668 | 1 | 26893-U |
| 100F-HP-GT-0.63/0.47   | 100 µL | 1.65/42 | 23-26 | 0.63/0.47 | Cone | 005668 | 1 | 26894-U |

##### Gas Tight - Removable Needle

|                |       |         |    |      |      |        |   |        |
|----------------|-------|---------|----|------|------|--------|---|--------|
| 10R-HP-GT-0.47 | 10 µL | 1.65/42 | 26 | 0.47 | Cone | 002817 | 1 | 509671 |
|----------------|-------|---------|----|------|------|--------|---|--------|

## CTC

### A200S, GC PAL Autosamplers

#### Hamilton

##### Microliter Syringes - Fixed Needle

|         |        |      |     |      |       |        |   |         |
|---------|--------|------|-----|------|-------|--------|---|---------|
| 7701.2N | 1.2 µL | 2/51 | 26P | ---  | Cone  | 203185 | 1 | 28617-U |
| 75N     | 5 µL   | 2/51 | 26s | 0.47 | Cone  | 203189 | 1 | 28613-U |
| 701N    | 10 µL  | 2/51 | 26s | 0.47 | Bevel | 203072 | 1 | 28614-U |
| 701N    | 10 µL  | 2/51 | 26s | 0.47 | Cone  | 203205 | 1 | 28615-U |

##### Gastight Syringes - Fixed Needle

|       |        |      |     |      |      |        |   |         |
|-------|--------|------|-----|------|------|--------|---|---------|
| 1702N | 25 µL  | 2/51 | 26s | 0.47 | Cone | 203043 | 1 | 28649-U |
| 1710N | 100 µL | 2/51 | 26s | 0.47 | Cone | 203076 | 1 | 28651-U |
| 1725N | 250 µL | 2/51 | 26s | 0.47 | Cone | 203078 | 1 | 28652-U |
| 1750N | 500 µL | 2/51 | 26s | 0.47 | Cone | 203080 | 1 | 28653-U |

## PerkinElmer

### GC Autosystem and Clarus® 500

#### Hamilton

##### Microliter Syringes - Fixed Needle

|          |      |         |     |      |       |       |   |       |
|----------|------|---------|-----|------|-------|-------|---|-------|
| 75ASN/PE | 5 µL | 2.75/70 | 26s | 0.47 | Blunt | 88040 | 1 | 24522 |
| 75ASN/PE | 5 µL | 2.75/70 | 23s | 0.64 | Blunt | 88035 | 1 | 24523 |

#### SGE

##### Fixed Needle

|            |      |         |    |      |      |        |   |        |
|------------|------|---------|----|------|------|--------|---|--------|
| 5F-PE-0.47 | 5 µL | 2.75/70 | 26 | 0.47 | Cone | 001953 | 1 | 509736 |
| 5F-PE-0.63 | 5 µL | 2.75/70 | 23 | 0.63 | Cone | 001954 | 1 | 509744 |

##### Removable Needle (Plunger-in-needle)

|               |        |         |    |      |      |        |   |       |
|---------------|--------|---------|----|------|------|--------|---|-------|
| 0.5BR-PE-0.47 | 0.5 µL | 2.75/70 | 26 | 0.47 | Cone | 000475 | 1 | 24406 |
| 0.5BR-PE-0.63 | 0.5 µL | 2.75/70 | 23 | 0.63 | Cone | 000478 | 1 | 24407 |

##### Gas Tight Syringes - Fixed Needle

|               |      |         |    |      |      |        |   |         |
|---------------|------|---------|----|------|------|--------|---|---------|
| 5F-PE-GT-0.47 | 5 µL | 2.75/70 | 26 | 0.47 | Cone | 001955 | 1 | 21930-U |
| 5F-PE-GT-0.63 | 5 µL | 2.75/70 | 23 | 0.63 | Cone | 001957 | 1 | 21929-U |

| Manufacturer Model Number | Volume | Needle Length in./mm | Gauge | OD mm | Point Style | Manufacturer Part No. | Pkg. Size | Cat. No. |
|---------------------------|--------|----------------------|-------|-------|-------------|-----------------------|-----------|----------|
|---------------------------|--------|----------------------|-------|-------|-------------|-----------------------|-----------|----------|

## Shimadzu

### AOC9 Autosampler

#### Hamilton

|  |       |         |     |      |       |        |   |        |
|--|-------|---------|-----|------|-------|--------|---|--------|
| <b>Microliter Syringe - Removable Needle</b><br>701          | 10 µL | 2/51    | 26s | 0.47 | Bevel | 80330  | 1 | 20697  |
| <b>SGE</b><br><b>Fixed Needle - Flexible Plunger</b><br>10FX | 10 µL | 1.97/50 | 26  | 0.47 | Bevel | 002130 | 6 | 23966  |
| <b>Removable Needle - Flexible Plunger</b><br>10RX           | 10 µL | 1.97/50 | 26  | 0.47 | Bevel | 002180 | 6 | 23967  |
| <b>Removable Needle</b><br>0.5BR-S(9)-0.47                   | 5 µL  | 1.97/50 | 26  | 0.47 | Cone  | 000435 | 1 | 509752 |
| 0.5BR-S(9)-0.63  | 10 µL | 1.97/50 | 26  | 0.47 | Cone  | 002885 | 1 | 509760 |

### AOC 14, AOC 17, and AOC 20 GC Autosamplers

#### SGE

|                                       |       |         |    |      |      |        |   |       |
|---------------------------------------|-------|---------|----|------|------|--------|---|-------|
| <b>Removable Needle</b><br>10R-S-0.47 | 10 µL | 1.65/42 | 26 | 0.47 | Cone | 002897 | 1 | 24418 |
| 10R-S-0.63                            | 10 µL | 1.65/42 | 23 | 0.63 | Cone | 002898 | 1 | 24419 |

## Thermo Finnigan Autosamplers

#### Hamilton

|  |       |      |     |      |                        |       |   |       |
|--|-------|------|-----|------|------------------------|-------|---|-------|
| <b>Microliter Syringes - Fixed Needle</b><br>701     | 10 µL | 2/51 | 26s | 0.47 | Bevel                  | 80300 | 1 | 20734 |
| 701  | 10 µL | 2/51 | 26s | 0.47 | Bevel                  | 80366 | 6 | 20779 |
| 701  | 10 µL | 2/51 | 26s | 0.47 | Cone tip,<br>Side-port | 80339 | 1 | 24532 |
| <b>Microliter Syringes - Removable Needle</b><br>701 | 10 µL | 2/51 | 26s | 0.47 | Bevel                  | 80338 | 1 | 21357 |

## Varian Autosamplers

#### SGE

|  |       |          |           |      |                        |        |   |         |
|--|-------|----------|-----------|------|------------------------|--------|---|---------|
| <b>Varian 8000 GC Autosamplers - Removable Needle</b><br>10R-VA80-11               | 10 µL | 1.97/50  | 25        | 0.5  | Dome                   | 002926 | 1 | 24420-U |
| <b>Varian 8035, 8100, and 8200 GC Autosamplers - Removable Needle</b><br>1BR-VA8X  | 1 µL  | 2/51     | 26        | 0.47 | Cone                   | 000655 | 1 | 24410-U |
| 10R-VA8X-11  | 10 µL | 2.09/53  | 25        | 0.5  | Cone tip,<br>Side-port | 002924 | 1 | 24421   |
| <b>SGE Replacement Needles and Plungers for Varian Syringes</b><br>for Varian 8035 | ---   | 2.09/53  | 25        | 0.5  | Bevel                  | 037776 | 2 | 24444   |
| for Varian 8035  | ---   | 4.13/105 | On-Column | 0.17 | Dome                   | 037778 | 2 | 24446   |
| for Varian 8100  | ---   | 2.09/53  | 25        | 0.5  | Cone tip,<br>Side-port | 037777 | 1 | 24445   |
| Replacement plunger<br>for Varian 10 µL syringes                                   | ---   | ---      | ---       | ---  | ---                    | 031218 | 1 | 21924   |

ordering: 800-247-6628 (US only) / 814-359-3441 technical service: 800-359-3041 (US and Canada only) / 814-359-3041

GC Autosampler  
Syringes

SUPELCO

## GC Autosampler Vials

A critical component to a successful chromatography analysis is the autosampler vial. Supelco offers autosampler vials in several configurations to assist in maintaining sample integrity.

- Available with crimp seals or screw caps
- Available in clear or amber glass
- Amber glass protects sensitive samples from exposure to UV light
- Silanized glass available in some configurations
- Silanization prevents adsorption on glass surfaces



| Description   | Pack Size | Cat. No. | Pack Size | Cat. No. |
|---|-----------|----------|-----------|----------|
| <b>Crimp Top Vials</b>  |           |          |           |          |
| <b>12 x 32 mm, 6.0 mm Opening</b>   |           |          |           |          |
| <b>Vials</b>  |           |          |           |          |
| 2.0 mL, Clear glass, 6.0 mm opening, crimp top                                  | 100       | SU860055 | 1000      | 854964   |
| 2.0 mL, Amber glass, 6.0 mm opening, crimp top                                  | 100       | SU860063 | 1000      | 854981   |
| 2.0 mL, Clear glass, 6.0 mm opening, crimp top, with marking spot               | 100       | SU860064 | 1000      | 854500   |
| 2.0 mL, Clear glass, 6.0 mm opening, crimp top, silanized                       | 100       | 27060-U  | 1000      | 27061    |
| 2.0 mL, Amber glass, 6.0 mm opening, crimp top, silanized                       | 100       | 27225-U  | 1000      | 27216    |
| 2.0 mL, Amber glass, 6.0 mm opening, crimp top, with marking spot               | 100       | 854998   | -         | -        |
| 1.5 mL, Maximum recovery vials, clear glass                                     | 100       | 27274    | -         | -        |
| 1.1 mL, Clear glass, conical bottom (requires support 27335)                    | 100       | 27310    | 1000      | 27311    |
| 0.1 mL, Limited volume vials, clear glass                                       | 100       | 24714    | -         | -        |
| <b>Inserts for 6.0mm vials</b>  |           |          |           |          |
| 0.1 mL Glass insert with bottom spring, 6 x 28 mm                               | 100       | SU860066 | 1000      | 854110   |
| 0.1 mL Glass insert, conical, 6 x 31 mm   | 100       | SU860067 | 1000      | 854988   |
| 0.25 mL Glass insert, conical, 6 x 31 mm  | 100       | 24717    | 1000      | 24718    |
| 0.35 mL Glass insert, shell style, 6 x 31 mm                                    | 100       | 24715    | 1000      | 24716    |
| <b>11mm Crimp caps</b>  |           |          |           |          |
| Aluminum, clear, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick               | 100       | 854140   | 1000      | 854980-U |
| Aluminum, green, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick               | -         | -        | 1000      | 854142   |
| Aluminum, red, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick                 | -         | -        | 1000      | 854144   |
| Aluminum, blue, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick                | 100       | 854187   | -         | -        |
| Aluminum, gold, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick                | 100       | 854188   | -         | -        |
| Aluminum, clear, 5.5 mm opening, PTFE/white silicone, 1.3 mm thick              | 100       | SU860094 | 1000      | SU860016 |
| Aluminum, clear, 5.5 mm opening, red PTFE/white silicone/red PTFE, 1.0 mm thick | 100       | SU860080 | -         | -        |
| <b>Convenience kits</b>   |           |          |           |          |
| 2.0 mL Clear vials, with PTFE/red rubber cap, unassembled                       | -         | -        | 1000      | SU860008 |
| 2.0 mL Amber vials, with PTFE/red rubber cap, unassembled                       | 100       | 27241    | 1000      | 27242-U  |

## Snap Top Vials

### 12 x 32 mm, 6.0 mm Opening

|  |     |          |      |        |
|--|-----|----------|------|--------|
| <b>Vials</b>   |     |          |      |        |
| 2.0 mL Clear glass, 6.0 mm opening   | 100 | SU860068 | 1000 | 854974 |
| 2.0 mL Amber glass, 6.0 mm opening   | 100 | SU860089 | 1000 | 854993 |
| 2.0 mL Clear glass, 6.0 mm opening, with marking spot                        | 100 | SU860081 | -    | -      |
| 2.0 mL Amber glass, 6.0 mm opening, with marking spot                        | 100 | SU860082 | -    | -      |
| <b>Inserts for 6.0mm vials</b>   |     |          |      |        |
| 0.1 mL Glass insert with bottom spring, 6 x 28 mm                            | 100 | SU860066 | 1000 | 854110 |
| 0.1 mL Glass insert, conical, 6 x 31 mm                                      | 100 | SU860067 | 1000 | 854988 |
| 0.25 mL Glass insert, conical, 6 x 31 mm                                     | 100 | 24717    | 1000 | 24718  |
| 0.35 mL Glass insert, shell style, 6 x 31 mm                                 | 100 | 24715    | 1000 | 24716  |
| <b>Snap ring caps</b>  |     |          |      |        |
| Polyethylene snap caps, 6 mm opening, TEF/natural rubber liner, 1.0 mm thick | 100 | SU860090 | 1000 | 854975 |
| Polyethylene snap caps, 6 mm opening, PTFE/silicone liner, 1.3 mm thick      | 100 | SU860093 | -    | -      |
| Polypropylene snap caps with PTFE liner, 0.3 mm thick                        | 100 | 24754    | -    | -      |
| Polypropylene snap caps with PTFE/silicone with slit, 1.0 mm thick           | 100 | 27426    | -    | -      |
| Polypropylene snap caps with PTFE/silicone with starburst, 1.0 mm thick      | 100 | 27427    | -    | -      |
| Polypropylene snap caps with PTFE/silicone/PTFE with starburst, 1.0 mm thick | 100 | 27428    | -    | -      |
| Polypropylene snap caps with PTFE/silicone/PTFE, 1.0 mm thick                | 100 | 24760-U  | -    | -      |

| Description  | Pack Size | Cat. No. | Pack Size | Cat. No. |
|--|-----------|----------|-----------|----------|
| <b>Screw Cap Vials</b>   |           |          |           |          |
| <b>12 x 32 mm, 4.6 mm Opening, 8/425 Thread</b>  |           |          |           |          |
| <b>Vials</b>   |           |          |           |          |
| 2.0 mL, Amber glass, 4.6 mm opening  | 100       | SU860083 | 1000      | 854983   |
| 2.0 mL, Clear glass, 4.6 mm opening, with marking spot   | 100       | 854171   | -         | -        |
| 2.0 mL, Amber glass, 4.6 mm opening, with marking spot   | 100       | 854172   | -         | -        |
| 1.1 mL, Clear glass, tapered bottom, Chromacol (requires sleeve 27335)                               | 100       | 27317    | 1000      | 27318    |
| <b>Inserts for 4.6mm vials</b>   |           |          |           |          |
| 0.1 mL Glass insert with bottom spring, 5 x 29 mm  | 100       | 24707    | -         | -        |
| 0.15 mL Glass insert, conical, 5 x 31 mm   | 100       | 854995   | -         | -        |
| 0.35 mL Glass insert, shell style, 5 x 31 mm   | 100       | 24701    | 1000      | 24702    |
| <b>Caps with septa</b>   |           |          |           |          |
| Polypropylene cap, black, 5.5 mm centre hole, TEF/natural rubber, 1.3 mm thick                       | 100       | SU860091 | 1000      | 854984   |
| Polypropylene cap, black, 5.5 mm centre hole, red PTFE/white silicone, 1.3 mm thick                  | 100       | SU860076 | -         | -        |
| Polypropylene cap, black, 5.5 mm centre hole, red PTFE/cream silicone, 1.3 mm thick                  | -         | -        | 1000      | 854985   |
| <b>Caps without septa</b>  |           |          |           |          |
| Phenolic cap, black, open top  | 100       | 27094-U  | -         | -        |
| Polypropylene cap, black, open top   | 100       | 27052    | 1000      | 24764    |
| Phenolic cap, solid caps with PTFE liner   | 100       | 27091-U  | -         | -        |
| Phenolic cap, solid cap with aluminum liner  | 100       | 27092-U  | -         | -        |
| <b>Septa</b>   |           |          |           |          |
| Septa, red PTFE/silicone/red PTFE, 1.0 mm thick  | 100       | 27096-U  | 1000      | 23182-U  |
| Septa, beige PTFE/silicone, 1.5 mm thick   | 100       | 27095-U  | 1000      | 33213    |
| Septa, red PTFE/white silicone, 1.5 mm thick   | 100       | 27097-U  | 1000      | 23243    |
| Septa, PTFE/silicone with slit, 1.0 mm thick   | 100       | 27098-U  | 1000      | 24881    |
| Septa, black viton, 0.75 mm thick  | 100       | 27350-U  | -         | -        |
| Septa, PTFE/red rubber, 1.3 mm thick   | 100       | 27132    | -         | -        |
| Liner, white PTFE, 0.25 mm thick (for use with solid top cap)  | 100       | 27133    | -         | -        |
| <b>12 x 32 mm, 6.0 mm Opening, 9 mm Thread</b>   |           |          |           |          |
| <b>Vials</b>   |           |          |           |          |
| 2.0 mL, Clear glass, 6.0 mm opening  | 100       | SU860105 | -         | -        |
| 2.0 mL, Clear glass, 6.0 mm opening, with marking spot   | 100       | 854165   | -         | -        |
| 2.0 mL, Amber glass, 6.0 mm opening, with marking spot   | 100       | SU860033 | -         | -        |
| <b>Inserts for 6.0mm vials</b>   |           |          |           |          |
| 0.1 mL, Glass insert with bottom spring, 6 x 28 mm   | 100       | SU860066 | 1000      | 854110   |
| 0.1 mL, Glass insert, conical, 6 x 31 mm   | 100       | SU860067 | 1000      | 854988   |
| 0.25 mL, Glass insert, conical, 6 x 31 mm  | 100       | 24717    | 1000      | 24718    |
| 0.35 mL, Glass insert, shell style, 6 x 31 mm  | 100       | 24715    | 1000      | 24716    |
| <b>Caps</b>  |           |          |           |          |
| Transparent polypropylene cap, 6 mm centre hole with red PTFE/white silicone septa, 1.0 mm thick     | -         | -        | 1000      | 854971   |
| Blue polypropylene cap, 6.0 mm centre hole with TEF/natural rubber septa, 1.0 mm thick               | 100       | 854161   | 1000      | 854973   |
| Blue polypropylene cap, 6.0 mm centre hole with red PTFE/white silicone septa, 1.0 mm thick          | 100       | SU860092 | 1000      | SU860019 |
| Blue polypropylene cap, 6.0 mm centre hole with red PTFE/white silicone/red PTFE septa, 1.0 mm thick | 100       | SU860079 | 1000      | SU860020 |
| <b>12 x 32 mm, 6.0 mm Opening, 10/425 Thread</b>   |           |          |           |          |
| <b>Vials</b>   |           |          |           |          |
| 2.0 mL, Clear glass, 6.0 mm opening  | 100       | 27265    | 1000      | SU860012 |
| 2.0 mL, Clear glass, 6.0 mm opening, with 0.25 mL glass insert                                       | 100       | 27418    | -         | -        |
| 2.0 mL, Amber glass, 6.0 mm opening  | 100       | 27267-U  | 1000      | 854990   |
| 2.0 mL, Amber glass with step, 6.0 mm opening  | 100       | 27406    | -         | -        |
| 2.0 mL, Amber glass, 6.0 mm opening, with 0.25 mL glass insert                                       | 100       | 27419    | -         | -        |
| 1.0 mL, Polypropylene, 6.0 mm opening  | 100       | 27269    | 1000      | 27270-U  |
| 0.75 mL, Polypropylene, 6.0 mm opening   | 100       | 27411    | -         | -        |
| 0.5 mL, Polypropylene, 6.0 mm opening  | 100       | 27410    | -         | -        |
| <b>Inserts for 6.0mm vials</b>   |           |          |           |          |
| 0.1 mL, Glass insert with bottom spring, 6 x 28 mm   | 100       | SU860066 | 1000      | 854110   |
| 0.1 mL, Glass insert, conical, 6 x 31 mm   | 100       | SU860067 | 1000      | 854988   |
| 0.25 mL, Glass insert, conical, 6 x 31 mm  | 100       | 24717    | 1000      | 24718    |
| 0.35 mL, Glass insert, shell style, 6 x 31 mm  | 100       | 24715    | 1000      | 24716    |
| <b>Caps for 6.0 mm opening vials</b>   |           |          |           |          |
| Polypropylene, black, open top   | 100       | 27271    | 1000      | 27272-U  |
| Polypropylene, yellow, open top  | 100       | 27413    | -         | -        |
| Polypropylene, white, open top   | 100       | 27414    | -         | -        |
| Polypropylene, black, open top with PTFE/silicone septa, 1.5 mm thick                                | 100       | 27273    | -         | -        |
| Polypropylene, black, solid cap, PTFE lined  | 100       | 27416    | -         | -        |
| <b>Septa for 6.0 mm opening vials</b>  |           |          |           |          |
| Septa, PTFE/silicone/PTFE, 1.0 mm thick  | 100       | 27275    | 1000      | 27276    |
| Septa, red PTFE/silicone, 1.5 mm thick   | 100       | 27277    | 1000      | 27278    |
| Septa, PTFE/silicone with slit, 1.0 mm thick   | 100       | 27279    | 1000      | 27280-U  |

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GC Autosampler Vials

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## Vial Accessories

- Hand Crimper – secures vial closure with a consistent and dependable seal
- Decapper – for quick and easy removal of an aluminum seal
- Vial Rack – convenient storage of screw and crimp cap vials
- Glass Magnet – keeps individual vials in place to prevent them from being accidentally knocked over

| Description  | Cat. No. | Pkg  |
|--|----------|------|
| Hand Crimper, for use with 11 mm crimp seals         | 33195    | 1 ea |
| Pliers-Type Decapper, for use with 11 mm crimp seals | 33281    | 1 ea |
| Vial Rack, for 12 x 32 mm vials (holds 50 vials)     | 23207    | 5 ea |
| Glass Magnet, 4 inch diameter                        | 57270    | 2 ea |



## PID Lamps

The photoionization detector (PID) lamp is a valuable tool for chromatographers and others investigating the presence of volatile organic compounds (VOCs). In fact, the PID continues to be the preferred choice for detecting VOCs due to its fast response time and sensitivity.



P001229

- Can detect volatiles as low as 1 ppb
- Emits very stable, precise photon energy
- More selective alternative than the flame ionization detector (FID)

| Description                  | Chamber Gas | Cat. No. |
|------------------------------|-------------|----------|
| Model 108, 10.0/10.6 eV      | Krypton     | 22626    |
| Model 103C, 10.0/10.6 eV     | Krypton     | 22631    |
| Model 108-BTEX, 10.0/10.6 eV | Krypton     | 23129-U  |
| Model 107, 8.4 eV            | Xenon       | 23132-U  |
| Model 108, 9.6 eV            | Xenon       | 23133-U  |
| PID Window Cleaning Kit      | ---         | 22627    |

## Wire Brush Detector Cleaning Kit

A collection of wire brushes specially tailored to clean FIDs and injection ports that accept 1/4 inch columns. The brass brushes prevent scratching and marring of expensive FID components.



P000304

Kit includes:

- Two detector brushes
- One injector port tube brush
- Brass toothbrush (for cleaning jets)
- A piece of emery (for electrical contacts)

| Description                              | Cat. No. | Pkg  |
|--|----------|------|
| For use with HP 5700, 5830               | 22403    | 1 ea |
| For use with Varian 3700, 1400, and 2700 | 22404    | 1ea  |

## Related Information

Interested in learning more? Here is a short list of technical and application pieces designed to assist you in meeting your analyses needs, available for download at no charge. Simply visit [sigma-aldrich.com/gc](http://sigma-aldrich.com/gc), or contact Supelco Technical Service at 800-359-3041 (US and Canada only), 814-359-3041, or [techservice@sial.com](mailto:techservice@sial.com)

| Lit. Code   | Type                      | Description  |
|-------------|---------------------------|--|
| T401027 DWM | Product Information Sheet | Capillary Injector Products for Agilent Technologies GCs |
| T407082 JQV | Product Information Sheet | Molded Thermogreen LB-2 Septa                            |
| T100741 AXR | Bulletin                  | Ferrules and Fittings for Packed and Capillary GC        |
| T196899 BBB | Bulletin                  | Capillary GC Inlet Liner Selection Guide                 |
| T404081 HCH | Poster                    | Selecting The Appropriate Inlet Liner                    |
| T197918 BIT | Bulletin                  | Selecting Purifiers for Gas Chromatography               |
| T196898 AYW | Bulletin                  | Gas Management Systems for GC                            |
| T112853 AIP | Bulletin                  | Capillary GC Troubleshooting Guide                       |

## Purifiers

Gas purification begins by determining the contaminants that need to be removed from the particular gas stream, levels to which the contaminants must be reduced, flow and pressure needs of the system, and the desired frequency of purifier change-out. Multiple purifiers may be necessary to remove the desired levels of contaminants to adequately protect the column and detector. Purifiers for most applications are listed below. Other purifiers are available, and can be found in our catalog and on our web site.

### OMI™ (Oxygen Moisture Indicating) Purifier

- Polishing purifier that removes many contaminants that other upstream purifiers miss
- Simultaneously removes moisture, oxygen, carbon monoxide, carbon dioxide, most sulfur compounds, most halogen compounds, alcohols, and phenols to less than 10 ppb
- Detects moisture and oxygen in hydrogen, helium, nitrogen, argon, and argon/methane
- As little as 1 ppm of moisture or oxygen will change the indicating resin from black to brown
- The indicating resin is licensed exclusively to Supelco for use in chromatographic applications
- Inert glass body prevents diffusion of ambient room contaminants into the carrier gas stream
- See-through polycarbonate holder provides safety



### High Capacity Gas Purifier

- Removes moisture, oxygen, carbon monoxide, and carbon dioxide
- No other purifier removes both moisture and oxygen in such large quantities
- Removes up to 35 liters of moisture or 14 liters of oxygen
- Clamshell heating unit has been specifically designed to ensure maximum gas purity
- Purifier tube is heated inside an oven where moisture and oxygen react with the reactant material in the tube
- Irreversible chemical reaction prevents contaminants from returning to the gas stream even when the purifier tube reaches saturation



### Supelcarb™ HC Hydrocarbon Purifier

- Removes hydrocarbons from carrier gas, compressed air, and hydrogen
- Supelcarb HC adsorbent is available exclusively from Supelco
- Manufactured in our own facility to ensure the cleanest material available to give the best trapping ability per gram
- Has twice the trapping ability of activated charcoal



### Supelpure™ HC Hydrocarbon Purifier

- Activated charcoal purifier that adsorbs hydrocarbons and other contaminants from carrier gas, compressed air, and hydrogen
- When the total hydrocarbons in the incoming gas average 100 ppm, operates efficiently for approximately six months

### Molecular Sieve 5A Water Vapor Purifier

- Can reduce moisture in the gas stream to final concentrations less than 0.1 ppm
- Also preferred for use on in-house gas lines where moisture content could be high
- Offers greater working capacity than similar molecular sieves



technical service: 800-359-3041 (US and Canada only) / 814-359-3041

ordering: 800-247-6628 (US only) / 814-359-3441

Purifiers

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## Supelpure-O Oxygen Purifier

- Reduces oxygen to less than 0.5 ppm when the level in the incoming gas does not exceed 10 ppm
- Oxygen-removing catalyst coated on a molecular sieve, will also trap significant amounts of moisture
- 120 cc purifier removes up to 1.5 g of moisture
- 750 cc purifier removes up to 10.2 g of moisture



P000230

## Supelco Helium Purifier

- Incorporates multiple beds of highly effective, high capacity adsorbent material to remove hydrocarbons, moisture, oxygen, carbon monoxide, and carbon dioxide from helium streams
- Ideal for any GC or GC-MS application where high purity helium is essential
- Output gas is 99.99999% pure
- Output purity: <100 ppb total of all contaminants, <30 ppb hydrocarbons (as methane), <20 ppb moisture, <2 ppb oxygen, <20 ppb carbon monoxide, <20 ppb carbon dioxide



P000332

## Super Clean™ Inline Design Purifiers

- Once the unique click-on connectors are installed into the gas line, they never need to be disconnected
- Eliminates the risk of leaking fittings
- Integral check valve in connectors prevents room air from entering gas line during purifier change-out
- Subsequent replacement of purifiers is simple, no tools required, and can be done in seconds
- Purifiers remove contaminants to produce better than 6.0 gas quality (99.9999% pure), independent of the purity of the incoming gas
- Triple removes hydrocarbons, moisture, and oxygen
- Dual removes hydrocarbons and moisture



E000937

## Super Clean Base-Plate Design Purifiers

- Specially designed base plate has needle valves that instantly close to provide a diffusion-proof seal when the purifier is removed
- Purifier replacement can be performed in seconds without exposing the gas lines to room air
- Purifiers remove contaminants to produce better than 6.0 gas quality (99.9999% pure), independent of the purity of the incoming gas
- Triple removes hydrocarbons, moisture, and oxygen
- Dual removes hydrocarbons and moisture



E000938

### Recommended Purifier Options per Application

**Carrier gas:** need to remove hydrocarbons, moisture, and oxygen

- Option 1: Supelcarb HC, High Capacity Gas Purifier, OMI-2
- Option 2: Supelcarb HC, Molecular Sieve 5A, Supelpure-O, OMI-2
- Option 3: Supelco Helium Purifier, OMI-2
- Option 4: Super Clean hydrocarbon, Super Clean moisture, Super Clean oxygen, OMI-2
- Option 5: Super Clean dual, Super Clean oxygen, OMI-2
- Option 6: Super Clean triple, OMI-2

**Compressed air (for FIDs):** need to remove hydrocarbons and moisture

- Option 1: Supelcarb HC, Molecular Sieve 5A
- Option 2: Super Clean hydrocarbon, Super Clean moisture
- Option 3: Super Clean dual

**Hydrogen fuel gas (for FIDs):** need to remove hydrocarbons

- Option 1: Supelcarb HC
- Option 2: Super Clean hydrocarbon

## Purifiers

| Description  | Design     | Fittings | Cat. No. |
|--|------------|----------|----------|
| <b>Single Bed Purifiers, Indicating</b>                                  |            |          |          |
| OMI-1 purifier tube  | Inline     | n/a      | 23900-U  |
| OMI-2 purifier tube  | Inline     | n/a      | 23906    |
| OMI-2 holder   | Inline     | 1/8 inch | 23921    |
| OMI-4 purifier tube  | Inline     | n/a      | 23909    |
| OMI-4 holder   | Inline     | 1/8 inch | 23926    |
| Super Clean moisture purifier  | Base-plate | n/a      | SU861021 |
| Super Clean moisture purifier, pack of 2                                 | Base-plate | n/a      | SU861028 |
| Super Clean oxygen purifier  | Base-plate | n/a      | SU861022 |
| <b>Single Bed Purifiers, Non-Indicating</b>                              |            |          |          |
| High Capacity Gas Purifier, 110 V  | Inline     | 1/8 inch | 23800-U  |
| High Capacity Gas Purifier, 230 V  | Inline     | 1/8 inch | 23801    |
| High Capacity replacement purifier tube                                  | Inline     | 1/8 inch | 22396    |
| High Capacity Gas Purifier, 110 V  | Inline     | 1/4 inch | 23802    |
| High Capacity Gas Purifier, 230 V  | Inline     | 1/4 inch | 23803    |
| High Capacity replacement purifier tube                                  | Inline     | 1/4 inch | 22398    |
| Supelcarb HC hydrocarbon purifier, 120 cc                                | Inline     | 1/8 inch | 24448    |
| Supelcarb HC hydrocarbon purifier, 120 cc                                | Inline     | 1/4 inch | 24449    |
| Supelcarb HC hydrocarbon purifier, 750 cc                                | Inline     | 1/4 inch | 24564    |
| Supelpure HC hydrocarbon purifier, 120 cc                                | Inline     | 1/8 inch | 22445-U  |
| Supelpure HC hydrocarbon purifier, 120 cc                                | Inline     | 1/4 inch | 22446    |
| Supelpure HC hydrocarbon purifier, 750 cc                                | Inline     | 1/4 inch | 24518    |
| Molecular Sieve 5A water vapor purifier, 200 cc                          | Inline     | 1/8 inch | 20619    |
| Molecular Sieve 5A water vapor purifier, 200 cc                          | Inline     | 1/4 inch | 20618    |
| Molecular Sieve 5A water vapor purifier, 750 cc                          | Inline     | 1/4 inch | 23991    |
| Supelpure-O oxygen purifier, 120 cc                                      | Inline     | 1/8 inch | 22449    |
| Supelpure-O oxygen purifier, 120 cc                                      | Inline     | 1/4 inch | 22450-U  |
| Supelpure-O oxygen purifier, 750 cc                                      | Inline     | 1/4 inch | 503088   |
| Super Clean hydrocarbon purifier   | Inline     | n/a      | 28863-U  |
| Super Clean hydrocarbon purifier   | Base-plate | n/a      | SU861023 |
| Super Clean hydrocarbon purifier, pack of 2                              | Base-plate | n/a      | SU861029 |
| Super Clean moisture purifier  | Inline     | n/a      | 28861-U  |
| Super Clean oxygen purifier  | Inline     | n/a      | 28862-U  |
| <b>Multi-Bed Purifiers, Non-Indicating</b>                               |            |          |          |
| Supelco Helium purifier  | Inline     | 1/8 inch | 27600-U  |
| Supelco Helium purifier  | Inline     | 1/4 inch | 27601-U  |
| Super Clean triple purifier  | Inline     | n/a      | 28864-U  |
| Super Clean triple purifier (helium specific)                            | Inline     | n/a      | 28865-U  |
| Super Clean dual purifier  | Inline     | n/a      | 28866-U  |
| <b>Multi-Bed Purifiers, Indicating (Not Indicating for Hydrocarbons)</b> |            |          |          |
| Super Clean triple purifier (helium specific)                            | Inline     | n/a      | 28867-U  |
| Super Clean triple purifier  | Base-plate | n/a      | SU861026 |
| Super Clean triple purifier (helium specific)                            | Base-plate | n/a      | SU861027 |
| Super Clean dual purifier  | Base-plate | n/a      | SU861025 |
| <b>Super Clean Click-on Connectors and Base Plates</b>                   |            |          |          |
| Click-on connectors, stainless steel, pack of 2                          | Inline     | 1/8 inch | 28873-U  |
| Click-on connectors, stainless steel, pack of 2                          | Inline     | 1/4 inch | 28872-U  |
| Click-on connectors, brass, pack of 2                                    | Inline     | 1/8 inch | 28869-U  |
| Click-on connectors, brass, pack of 2                                    | Inline     | 1/4 inch | 28868-U  |
| Base-plate, single position, brass fittings                              | Base-plate | 1/8 inch | SU861011 |
| Base-plate, two position, brass fittings                                 | Base-plate | 1/8 inch | SU861012 |
| Base-plate, three position, brass fittings                               | Base-plate | 1/8 inch | SU861013 |

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Purifiers

SUPELCO

## Tubing, Cutters, and Fittings

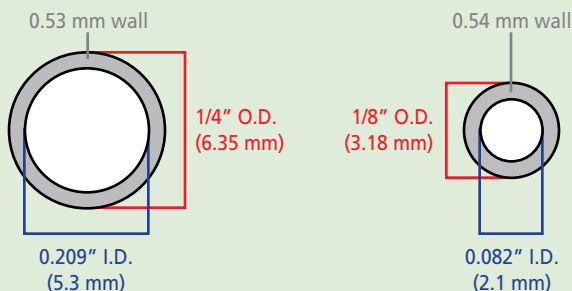


P000301

Many types of tubing are available to supply a variety of gases for gas chromatography systems. Supelco recommends using stainless steel for the most sensitive applications, such as high resolution MS detection (MS-MS, ion trap, or TOF). More economical copper tubing is recommended for all other GC and GC-MS plumbing needs. All of our tubing is specially cleaned to remove any residue. Other tubing choices are available and can be found in our catalog and on our web site.

### Premium Grade 304 Stainless Steel Tubing

#### Stainless Steel Tubing Dimensions



- Virtually impermeable to the diffusion of room air through the tubing walls
- Undergoes a proprietary cleaning procedure to remove all active sites and to ensure inertness
- Best choice for the most sensitive applications, such as high resolution MS detection (MS-MS, ion trap, or TOF)

### Cleaned Copper Tubing

- Most commonly used tubing for gas chromatography
- Cleaned according to ASTM B-280 plus a proprietary Supelco cleaning procedure, resulting in tubing that exceeds instrument manufacturers' requirements
- Best choice for most GC and GC-MS plumbing needs

| Description   | Cat. No. |
|---|----------|
| <b>Premium Grade 304 Stainless Steel Tubing</b>                 |          |
| 50 ft. x 1/4 inch (6.35 mm) O.D. x 0.209 inch (5.3 mm) I.D.     | 20527    |
| 50 ft. x 1/8 inch (3.18 mm) O.D. x 0.085 inch (2.1 mm) I.D.     | 20526-U  |
| 100 ft. x 1/16 inch (1.59 mm) O.D. x 0.030 inch (0.762 mm) I.D. | 20553    |
| <b>Cleaned Copper Tubing</b>                                    |          |
| 50 ft. x 1/4 inch (6.35 mm) O.D. x 0.190 inch (4.83 mm) I.D.    | 20489    |
| 50 ft. x 1/8 inch (3.18 mm) O.D. x 0.065 inch (1.65 mm) I.D.    | 20488    |

### Tubing Cutters

Proper gas line connections are important for maximum chromatographic performance. Leaks, caused by a poor fit between tubing and the mating seat, can cause serious damage to GC columns. Therefore, it is critical for tubing to have crisp, clean ends.



58539-U

P000836

- TC-20, voltage selectable (110/220 V), CE compliant
- TC-20 cuts 1/16, 1/8, or 1/4 inch copper or stainless steel
- Heavy duty cuts 1/8 or 1/4 inch copper or stainless steel
- Tubing bender – easily bends copper and stainless tubing up to 180° without kinking
- Tubing reamer – opens and rounds tubing after cutting



| Description                     | Cat. No. |
|---------------------------------|----------|
| TC-20 Tubing Cutter (110/220 V) | 58539-U  |
| Heavy Duty Tubing Cutter        | 20425-U  |
| 1/8 inch O.D. Tubing Bender     | 20422-U  |
| 1/4 inch O.D. Tubing Bender     | 20424-U  |
| Tubing Reamer                   | 20389    |

### Swagelok® Tubing Fittings

A leak free system is the first requirement in a systematic approach to supplying quality gas to a chromatography system. Swagelok fittings combine superior design principles with close manufacturing tolerance and rigid quality to provide such a leak free connection. Some of the most popular items are listed. For a complete listing, please refer to our catalog and/or our web site.



P000252

| Description   | Cat. No. |
|---|----------|
| Swagelok Fittings Kit   | 22668-U  |
| Nuts Plus Front and Back Ferrules, brass, 1/8 inch, 10 of each          | 22014    |
| Nuts Plus Front and Back Ferrules, stainless steel, 1/8 inch, 5 of each | 22040-U  |
| Tee, brass, 1/8 inch  | 22020-U  |
| Tee, stainless steel, 1/8 inch  | 22046    |
| On/off throttling valve, brass, 1/8 inch                                | 22138-U  |
| On/off throttling valve, stainless steel, 1/8 inch                      | 22139-U  |
| Toggle valve, brass, 1/8 inch   | 22699    |
| Toggle valve, stainless steel, 1/8 inch                                 | 22698    |

Maximize Performance!

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## Valves and Gauges

### Diaphragm Shutoff Valve

- Multiple metal diaphragms provides a permanent seal
- Diaphragm prevents diffusion of air and moisture into gas flow
- Brass body
- Kel-F seat



P000208

| Description                          | Cat. No. | Pkg. |
|--------------------------------------|----------|------|
| 1/4 in. male NPT, 1/4 in. female NPT | 23896    | 1ea  |
| 1/4 in. male NPT                     | 23897    | 1ea  |

### Related Information

For more information on plumbing gas lines to a GC, whether a single system or a complete facility, request T196898 AYW (Gas Management Systems for GC), or contact Supelco Technical Service at 800-359-3041 (US and Canada only), 814-359-3041, or techservice@sial.com

### Pressure Gauge

- Steel and copper alloy construction
- 2 inch diameter gauge
- Brass tee



P000209

| Description                             | Cat. No. | Pkg |
|---|----------|-----|
| 0-30 psi, in-line tee: 1/8 in.          | 20469    | 1ea |
| 0-60 psi, in-line tee: 1/8 in.          | 20470    | 1ea |
| 0-100 psi, in-line tee: 1/8 in.         | 22423    | 1ea |
| 0-30 psi, in-line tee: 1/8 in. male NPT | 20393    | 1ea |
| 0-60 psi, in-line tee: 1/8 in. male NPT | 20394    | 1ea |

### Pressure Gauge Kit

- 0-100 psi
- 1/8 inch tee
- Includes 1/2 meter of copper tubing



P000210

| Description        | Cat. No. | Pkg |
|--------------------|----------|-----|
| Pressure gauge kit | 20392    | 1ea |

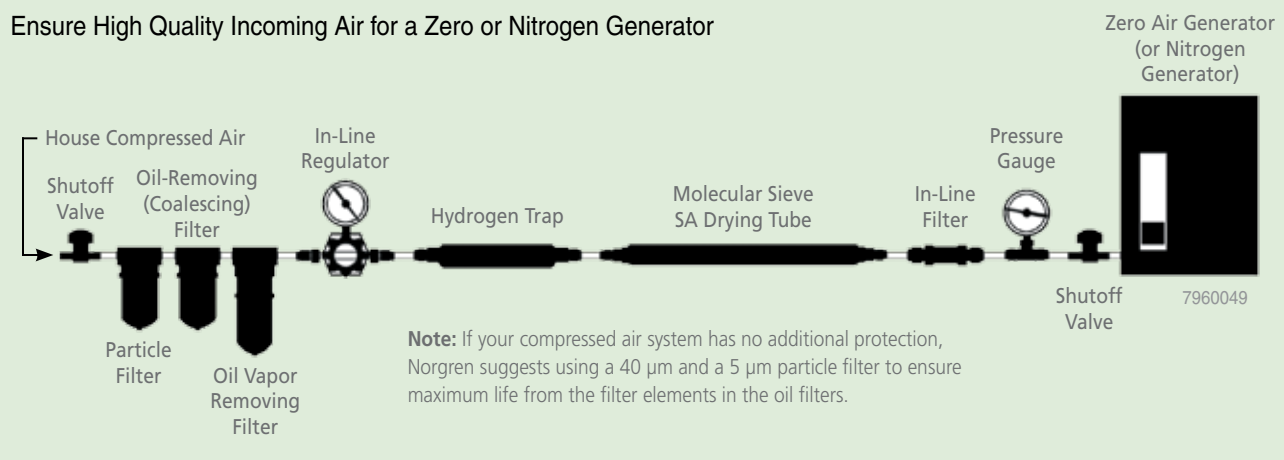
## Norgren® Particle and Oil Filters

Airborne dust can be drawn into the intake of an air compressor. These dust particles as well as any oils released from an air compressor can damage any downstream gas generator. Norgren filters are designed to remove solid and liquid particles in addition to oil aerosols. The oil-removing and oil vapor-removing filters must be protected with a particle filter upstream.

- Install between air compressors and gas generators
- Designed to be used together as a three- or four-filter system
- Elements are easily replaced

| Description               | Fittings            | Cat. No. |
|---------------------------|---------------------|----------|
| Particle filter, 40 µm    | 1/4 inch female NPT | 24990-U  |
| Particle filter, 5 µm     | 1/4 inch female NPT | 24992    |
| Oil-removing filter       | 1/4 inch female NPT | 24994    |
| Oil vapor-removing filter | 3/8 inch female NPT | 24996    |

### Ensure High Quality Incoming Air for a Zero or Nitrogen Generator



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Valves and Gauges  
Norgren Filters

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## Gas Generators

Laboratory gas generators are a great alternative to gas cylinders. In addition to being a much more sensible source of gas from a cost standpoint, generators are safer, cosmetically better, take up less space, and do not require the labor needed to transport bulky cylinders into the lab. Supelco offers gas generators from Parker domnick hunter. Models for hydrogen, zero air, and nitrogen are listed below. Other gas generators can be found in our catalog and on our web site.

### Parker ChromGas® Hydrogen Generators



- Easy to use, an electrical outlet and deionized water are all that are required to generate hydrogen for weeks of continuous operation
- Minimal maintenance required
- Uses a solid polymer electrolyte, rather than a liquid electrolyte, eliminating the need for toxic liquids
- Built-in sensing circuit shuts the generator down if a leak is detected
- Can be used with any instrumentation requiring fuel grade hydrogen
- Connections: 1/8" compression fitting
- Delivery purity: 99.9995% (99.99997% for Model 9800)

### Parker ChromGas Zero Air Generators



- Easy to use, an electrical outlet and a compressed air source are all that are required to produce ultra-high purity zero air
- Minimal maintenance required
- Recommended for use with flame ionization detectors to stabilize baselines and improve detection
- Inlet air pressure: 2-125 psi
- Connections: 1/8" compression fitting
- Delivery purity: <0.1 ppm total hydrocarbons (as methane)

### domnick hunter® NITROX™ Hydrocarbon-free Nitrogen Generators

- Employs pressure swing adsorption technology to produce a continuous supply of hydrocarbon-free nitrogen.
- Integral oil-free air compressor eliminates need for a separate air compressor
- Filtered compressed air goes across a bed of carbon molecular sieve, which selectively removes hydrocarbons, moisture, oxygen, and carbon dioxide
- Heated catalyst reduces any residual hydrocarbons
- Connections: 1/4" NPT fitting
- Delivery purity: <10 ppm oxygen
- Delivery purity: <0.1 ppm total hydrocarbons (as methane)



### domnick hunter NITROX High-Purity Nitrogen Generators

- Employs pressure swing adsorption technology to produce a continuous supply of high purity nitrogen
- Integral oil-free air compressor eliminates need for a separate air compressor
- Filtered compressed air goes across a bed of carbon molecular sieve, which selectively removes hydrocarbons, moisture, oxygen, and carbon dioxide
- Connections: 1/4" NPT fitting
- Delivery purity: <10 ppm oxygen

| Description  | Max. Output                  | Cat. No. |
|--|------------------------------|----------|
| <b>Parker ChromGas Hydrogen Generators</b>                 |                              |          |
| Model 9090, 110 V  | 90 mL/min.; 90 psi           | 27773-U  |
| Model 9150, 110 V  | 160 mL/min.; 90 psi          | 27620-U  |
| Model 9200, 110 V  | 250 mL/min.; 90 psi          | 22751    |
| Model 9400, 110 V  | 500 mL/min.; 90 psi          | 22801    |
| Model 9800, 110 V  | 1200 mL/min.; 100 psi        | 22835    |
| <b>Parker ChromGas Zero Air Generators</b>                 |                              |          |
| Model 1000, 110 V  | 1000 mL/min.; 125 psi        | 22824    |
| Model 3500, 110 V  | 3500 mL/min.; 125 psi        | 27625-U  |
| Model 1001, 230 V  | 1000 mL/min.; 125 psi        | 22830-U  |
| Model 3501, 230 V  | 3500 mL/min.; 125 psi        | 27626-U  |
| <b>domnick hunter Hydrocarbon-free Nitrogen Generators</b> |                              |          |
| Model 1001, 110 V  | 1000 mL/min.; 73 psi / 5 bar | 27765-U  |
| Model 1001, 230 V  | 1000 mL/min.; 73 psi / 5 bar | 28366-U  |
| <b>domnick hunter High-Purity Nitrogen Generators</b>      |                              |          |
| Model 0751, 110 V  | 750 mL/min.; 73 psi / 5 bar  | 27760-U  |
| Model 1501, 110 V  | 1500 mL/min.; 73 psi / 5 bar | 27761-U  |
| Model 3001, 110 V  | 3000 mL/min.; 73 psi / 5 bar | 27762-U  |
| Model 0751, 230 V  | 750 mL/min.; 73 psi / 5 bar  | 28360-U  |
| Model 1501, 230 V  | 1500 mL/min.; 73 psi / 5 bar | 28361-U  |
| Model 3001, 230 V  | 3000 mL/min.; 73 psi / 5 bar | 28362-U  |

## Leak Detectors

Using liquids to detect gas leaks in a gas chromatography system can lead to unforeseen problems. Small amounts of liquid can seep into fittings, or through the septum, and damage the column. Electronic leak detectors are a much better alternative than liquid detectors, and can easily and quickly pinpoint gas leaks that are too small to detect with a soap solution. Liquid leak detectors are still available, and can be found in our catalog and on our web site.



P000330

## GOW-MAC® Gas Leak Detectors

- Easy to operate
- Allow leaks to be found quickly without risk of contaminating the system
- Provides maximum usable sensitivity with high signal to noise ratio amplification
- Operates on the same principle as a thermal conductivity detector
- Will respond to any gas mixture that has a thermal conductivity value different from that of air
- Include internal, rechargeable batteries and charger

| Description                        | Cat. No. |
|------------------------------------|----------|
| Model 21-250, selectable 110/220 V | 22409    |
| Model 21-070, miniature, 115 V     | 22807    |
| Model 21-072, miniature, 230 V     | 22808    |
| Carrying case for 22807 or 22808   | 22809    |

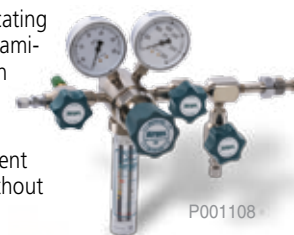
## Pressure Regulators

Choosing the correct pressure regulators is critical to having a gas delivery system that will provide consistent results and help to ensure maximum column life. For all chromatographic applications, it is recommended to use a regulator manufactured using appropriate materials and processes resulting in a regulator that does not allow contaminants to enter the gas stream. The high purity and ultra-high purity models meet these stringent demands. Select a regulator based on the application and type of gas to be used.

- Easy-to-read gauges
- Leak tested, ready to use
- Bar stock bodies manufactured from either nickel-plated brass or brass
- Ultrasonically cleaned to eliminate halocarbons and hydrocarbon residues
- Diaphragms made from 316 grade stainless steel, virtually impermeable to the diffusion of room air
- High purity models use captive Teflon gasket diaphragm seals
- Ultra-high purity models use metal-to-metal diaphragm seals

### Smart Indicating Regulators (SIR®)

- Incorporate a unique indicating purifier that removes contaminants as they pass through
- Patented quick-change base has an integral check valve, allowing a spent purifier to be changed without room air entering
- Check valve at the inlet prevents room air from entering during cylinder change-out
- Maximum inlet pressure of 3000 psi / 204 bar



P001108

### Conventional Regulators

- 20 µm sintered filters protect regulator from particles and pressure surges
- Maximum inlet pressure of 3000 psi / 204 bar



P000205

### Inline Regulators

- Adjust pressure at the point of use
- Install downstream of a cylinder regulator
- Maximum inlet pressure of 400 psi / 27 bar



P000211

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Leak Detectors  
Pressure Regulators

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## Regulators

| Description                              | Type         | Inlet   | Outlet                 | Cat. No. |
|--|--------------|---------|------------------------|----------|
| <b>Smart Indicating Regulators (SIR)</b> |              |         |                        |          |
| High purity, with purge valve            | Two-stage    | CGA 580 | 1/4 inch male Swagelok | 28817-U  |
| High purity, with purge valve            | Single-stage | CGA 580 | 1/4 inch male Swagelok | 28813-U  |
| High purity, with purge valve            | Two-stage    | CGA 350 | 1/4 inch male Swagelok | 28816-U  |
| High purity, with purge valve            | Single-stage | CGA 350 | 1/4 inch male Swagelok | 28812-U  |
| High purity, with purge valve            | Two-stage    | CGA 590 | 1/4 inch male Swagelok | 28818-U  |
| High purity, with purge valve            | Single-stage | CGA 590 | 1/4 inch male Swagelok | 28814-U  |
| Replacement triple purifier              | n/a          | n/a     | n/a                    | 28827-U  |
| Replacement triple purifier, pack of 3   | n/a          | n/a     | n/a                    | 28828-U  |
| <b>Conventional Regulators</b>           |              |         |                        |          |
| High purity, with purge valve            | Two-stage    | CGA 580 | 1/8 inch male Swagelok | 23879    |
| High purity, with purge valve            | Single-stage | CGA 580 | 1/8 inch male Swagelok | 23876    |
| High purity, without purge valve         | Two-stage    | CGA 580 | 1/4 inch male NPT      | 503398   |
| High purity, without purge valve         | Single-stage | CGA 580 | 1/4 inch male NPT      | 503355   |
| Ultra-high purity, with purge valve      | Two-stage    | CGA 580 | 1/8 inch male Swagelok | 23872    |
| Ultra-high purity, with purge valve      | Single-stage | CGA 580 | 1/8 inch male Swagelok | 23870    |
| Ultra-high purity, without purge valve   | Two-stage    | CGA 580 | 1/4 inch male Swagelok | 503339   |
| Ultra-high purity, without purge valve   | Single-stage | CGA 580 | 1/4 inch male Swagelok | 503312   |
| High purity, with purge valve            | Two-stage    | CGA 350 | 1/8 inch male Swagelok | 23880-U  |
| High purity, with purge valve            | Single-stage | CGA 350 | 1/8 inch male Swagelok | 23877    |
| High purity, without purge valve         | Two-stage    | CGA 350 | 1/4 inch male NPT      | 503401   |
| High purity, without purge valve         | Single-stage | CGA 350 | 1/4 inch male NPT      | 503363   |
| Ultra-high purity, with purge valve      | Two-stage    | CGA 350 | 1/8 inch male Swagelok | 23873    |
| Ultra-high purity, without purge valve   | Two-stage    | CGA 350 | 1/4 inch male Swagelok | 503347   |
| Ultra-high purity, without purge valve   | Single-stage | CGA 350 | 1/4 inch male Swagelok | 503320   |
| High purity, with purge valve            | Two-stage    | CGA 590 | 1/8 inch male Swagelok | 23881    |
| High purity, with purge valve            | Single-stage | CGA 590 | 1/8 inch male Swagelok | 23878    |
| High purity, without purge valve         | Two-stage    | CGA 590 | 1/4 inch male NPT      | 503428   |
| High purity, without purge valve         | Single-stage | CGA 590 | 1/4 inch male NPT      | 503371   |
| High purity, with purge valve            | Two-stage    | DIN 6   | 1/8 inch male Swagelok | 24972    |
| High purity, with purge valve            | Two-stage    | DIN 1   | 1/8 inch male Swagelok | 24974    |
| High purity, with purge valve            | Two-stage    | DIN 13  | 1/8 inch male Swagelok | 24973    |
| <b>Inline Regulators</b>                 |              |         |                        |          |
| High purity                              | Single-stage | n/a     | 1/8 inch male Swagelok | 23882    |
| Ultra-high purity                        | Single-stage | n/a     | 1/8 inch male Swagelok | 23884    |

| Inlet   | For Use With                     |
|---------|----------------------------------|
| CGA 580 | helium, nitrogen, argon          |
| CGA 350 | hydrogen, methane, argon/methane |
| CGA 590 | compressed air                   |
| DIN 6   | helium, nitrogen, argon          |
| DIN 1   | hydrogen, methane, argon/methane |
| DIN 13  | compressed air                   |

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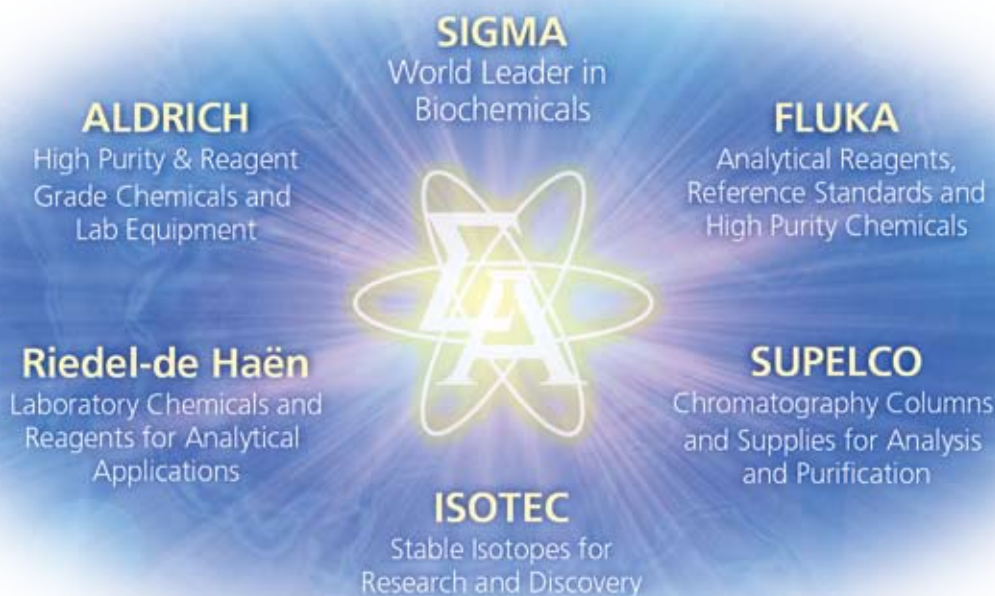
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