



# THE Essential

## CHROMATOGRAPHY & SPECTROSCOPY

### CATALOG

20<sup>11</sup><sub>12</sub>  
EDITION

GENERAL CHROMATOGRAPHY  
PAGES 34-139



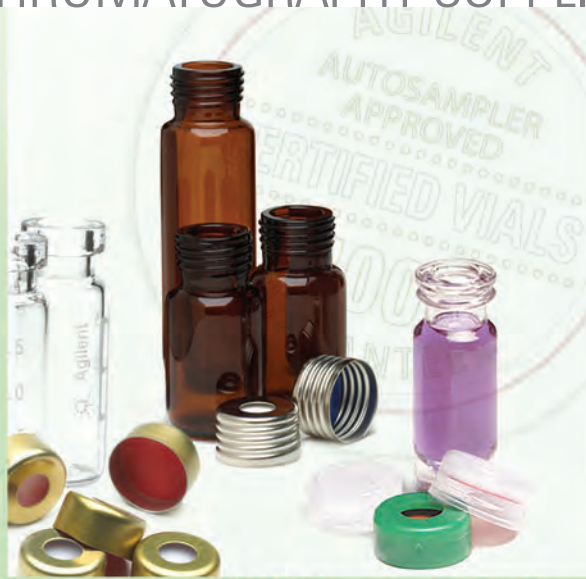
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The Measure of Confidence



Agilent Technologies

# GENERAL CHROMATOGRAPHY SUPPLIES



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## Certified Vials and Closures

### Prevent sequence problems and unpleasant surprises: Use Agilent Certified Vials, Caps, and Septa



Agilent Certified Vials are the only vials that are designed and tested to Agilent's exact specifications – and are the only vials guaranteed to be fully compatible with Agilent autosamplers and corresponding closures. In addition, Agilent Certified Vials are:

- Agilent engineered and manufactured to critical specifications, ensuring an exact fit with Agilent instrumentation
- In-line opto-electronic testing inspects 100% of all key dimensions
- Produced in a clean environment
- Produced in an ISO 9001 certified facility
- Packaged in material that has been tested and selected for cleanliness
- Made from First Hydrolytic Type 1 Class A borosilicate glass, which conforms to US FDA, USP, and EU Pharmacopeia standards
- Subjected to rigorous end-of-line sampling and quality control procedures to ensure all vials remain within specifications
- Available deactivated

To raise the bar even higher, Agilent Certified Caps and Septa are also designed for proper sealing and smooth operation with Agilent instruments. We even perform chromatographic tests on our silicone septa to ensure the highest standards of purity.



For a detailed Certificate of Conformance listing critical quality specifications and signed by Agilent's Quality Manager, visit [www.agilent.com/chem/cofc](http://www.agilent.com/chem/cofc)

**Why it is Critical to Use Certified Vials and Closures on Agilent Autosamplers**

Common Problems	Effects	Benefits of Agilent Certified Vials and Caps
Inconsistency with vial bottom thickness	<ul style="list-style-type: none"> <li>• Sample draw inconsistency</li> <li>• Damaged needle</li> </ul>	Consistent and valid relative standard deviation (RSD) values
Autosampler sequence interruption	<ul style="list-style-type: none"> <li>• Mishandled or dropped vials</li> <li>• Loss of precious sample</li> </ul>	Confidence in unattended operation
Undetected improper seal	<ul style="list-style-type: none"> <li>• Sample loss/evaporation</li> <li>• Possible sample contamination</li> </ul>	Proper sealing for accurate results
Dislodged or misaligned septa	<ul style="list-style-type: none"> <li>• Sample loss</li> <li>• Sample contamination</li> </ul>	Accurate results
Ghost peaks	<ul style="list-style-type: none"> <li>• Contamination by cap septa</li> </ul>	Chromatographic purity test that eliminates outliers and analysis errors

**Agilent Vials Selection Guide**

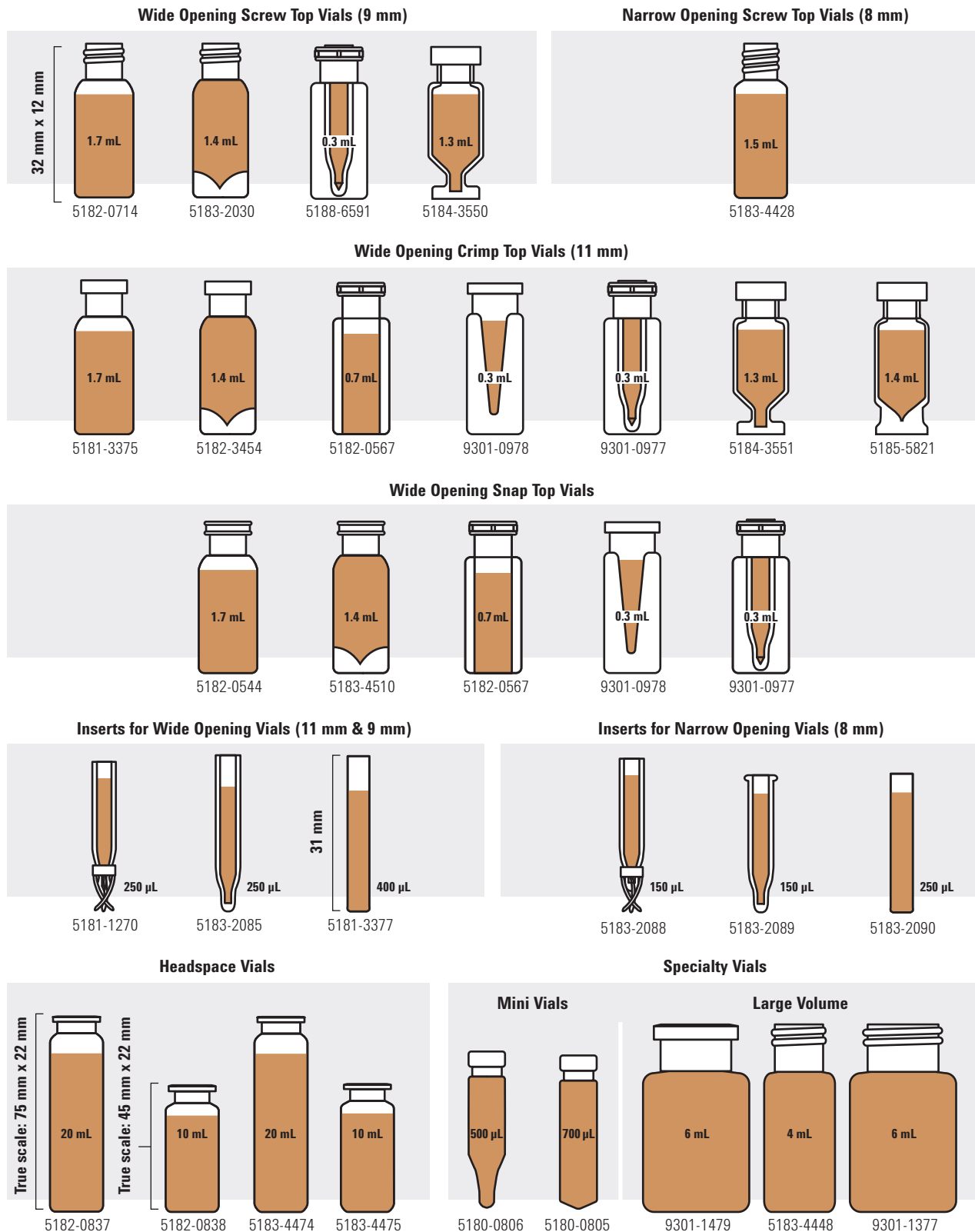
	MS Analyzed	Certified for Agilent Autosamplers	Amber	Clear	Write-on Spot	Silanized	Convenience Pack	High Recovery	Fixed Inserts
2 mL Screw Top	◆	◆	◆	◆	◆	◆	◆	◆	◆
2 mL Crimp Top	◆	◆	◆	◆	◆	◆	◆	◆	◆
2 mL Snap Top			◆	◆	◆	◆	◆	◆	◆
4 mL Screw Top			◆	◆					
6 mL Screw Top				◆				◆	
6 mL Crimp Top				◆					
Standard Opening (8-425)			◆	◆	◆	◆			
Headspace Crimp Top		◆	◆	◆			◆		
Polypropylene		◆							◆

## Septum Selection Guide

Septum Material	Compatible with	Incompatible with	Resealability	Max. Temperature
Rubber (Natural or Butyl)	ACN, acetone, DMF, alcohols, diethylamine, DMSO, phenols	Chlorinated solvents, aromatics, hydrocarbons, carbon disulfide	Excellent	< 100°C
PTFE/Natural or Butyl Rubber	PTFE resistance until punctured, then septa or liner will have compatibility of rubber		Good	< 100°C
Silicone/Silicone Rubber	Alcohol, acetone, ether, DMF, DMSO	ACN, THF, benzene chloroform, pyridine, toluene, hexane, heptane	Excellent	< 200°C
PTFE/Silicone, PTFE/Silicone/PTFE	PTFE resistance until punctured, then septa will have compatibility of silicone		Average	< 200°C
Viton	Chlorinated solvents, benzene, toluene, alcohols, hexane, heptane	DMF, DMSO, ACN, THF, pyridine, dioxane, methanol, acetone	Good	< 260°C



## Agilent Vial Identification Chart and Actual Fill Volumes



## MS Analyzed Vial Kits

Agilent MS Analyzed Vial Kits end the need to pre-test or to re-run samples due to unexpected peaks. All MS Analyzed Vials Kits include a Certificate of Analysis that contains true, lot-specific and fully traceable LC/MS and GC/MS signal traces, as well as critical physical dimensions. Agilent's new MS Analyzed Vial Kits provide lot-specific test results for greater confidence in your results.

- All vials lot-tested by both GC/MS and LC/MS using Agilent system
- Manufactured for full-warranted compatibility with Agilent GC and LC autosampler
- Available in unique packaging designed to reduce vial breakage
- Packed in a clean environment using clean packaging to reduce contamination
- Available in both crimp top and screw top closures
- Larger write-on spots for easier labeling and identification
- Conveniently packaged in a combination pack with 100 vials and 100 caps/septa



Screw top MS analyzed vial kit, 5190-2277



Screw top MS analyzed vial kit, 5190-2280



Crimp top MS analyzed vial kit, 5190-2282

### MS Analyzed Vial Kits

Vial Type	Septa Type	Cap Color	Unit	Part No.
<b>Screw Top MS Analyzed Vial Kits</b>				
Clear	PTFE/red silicone septa	Blue	100/pk	5190-2277
Clear with write-on spot	PTFE/red silicone septa	Blue	100/pk	5190-2278
Amber	PTFE/red silicone septa	Blue	100/pk	5190-2279
Amber with write-on spot	PTFE/red silicone septa	Blue	100/pk	5190-2280
<b>Crimp Top MS Analyzed Vial Kits</b>				
Clear	PTFE/white silicone septa	Silver aluminum	100/pk	5190-2281
Clear with write-on spot	PTFE/white silicone septa	Silver aluminum	100/pk	5190-2282
Amber	PTFE/white silicone septa	Silver aluminum	100/pk	5190-2283





## Screw Top Vials and Closures

Combine the excellent autosampler handling of a crimp cap profile with the ease of a screw cap. The screw caps and precision fit septa give a secure seal with microvolume inserts.

- Certified for full warranted compatibility with Agilent autosamplers
- 2 mL, 12 x 32 mm, 9 mm diameter
- Available in unique packaging designed to reduce vial breakage
- 40% larger opening than standard narrow opening vials
- Unique thread design for consistently secure seal
- Precision-formed neck for optimal robotic arm handling
- Rigorous quality assurance for dimensional consistency from lot-to-lot
- Optional ceramic write-on spot with fill marks

### 2 mL Wide Opening Screw Top Glass Vials

Description	Certified	100/pk	1000/cs*
Clear	◆	5182-0714	5183-2067
Clear, write-on spot	◆	5182-0715	5183-2068
Amber	◆	5188-6535	5188-6536
Amber, write-on spot	◆	5182-0716	5183-2069
<b>Deactivated Vials</b>			
Clear	◆	5183-2070	
Clear, write-on spot	◆	5183-2071	
Amber, write-on spot	◆	5183-2072	
<b>Screw Top Vials with Fixed Inserts</b>			
Clear, 300 µL insert volume		5188-6591	
Amber, 300 µL insert volume		5188-6592	

\*Case includes 10 packs of 100 vials



Screw caps with septa

## Screw Caps for 2 mL Vials

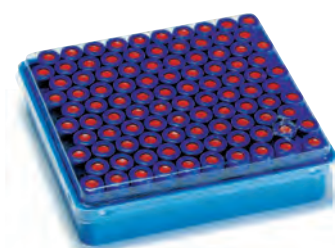
Color	Septa Type	Certified	100/pk	500/pk	1000/pk
Blue	PTFE/red silicone septa	◆	5182-0717	5185-5820	5190-1599
	PTFE/white silicone septa	◆	5182-0720	5185-5863	
	PTFE/silicone/PTFE septa	◆	5182-0723	5185-5862	
	Pre-slit PTFE/silicone septa	◆	5183-2076	5185-5865	
	PTFE-lined solid top	◆	5183-2075		
	Open top, no septa	◆	5182-0728		
	Bonded PTFE/silicone septa			5185-5823	
	Bonded pre-slit PTFE/silicone septa			5185-5824	5040-4649
Green	PTFE/red silicone septa	◆	5182-0718	5185-5829	
	PTFE/white silicone septa	◆	5182-0721	5185-5864	
	PTFE/silicone/PTFE septa	◆	5182-0724	5185-5861	
	Pre-slit PTFE/silicone septa	◆	5183-2077		
	Open top, no septa	◆	5182-0727		
Red	PTFE/red silicone septa	◆	5182-0719		
	PTFE/white silicone septa	◆	5182-0722		
	PTFE/silicone/PTFE septa	◆	5182-0725		
	Pre-slit PTFE/silicone septa	◆	5183-2078		
	Open top, no septa	◆	5182-0726		
Black	PTFE/red silicone septa	◆	5185-5838		
Purple	PTFE/silicone septa	◆	5040-4681		
Light turquoise	PTFE/silicone septa	◆	5040-4683		

## Certified Septa for Wide Opening Screw Caps

Septa Type	Color	Unit	Part No.
PTFE/red silicone	Ivory	100/pk	5182-0731
PTFE/white silicone/red PTFE	Red	100/pk	5182-0729
Pre-slit PTFE/white silicone	Blue	100/pk	5183-2074
PTFE/white silicone	Red	100/pk	5182-0730

## Certified Screw Cap Pack for 7696 Sample Prep Workbench

Description	Septa Type	Part No.
Multicolor screw cap pack Includes 50/pk of each color: blue, green, red, light turquoise, purple	PTFE/silicone septa	5040-4682



Pre-assembled vial pack

## Certified 2 mL Screw Top Vial Packs

Pre-assembled packs come ready-to-use with the cap and septum of your choice attached to the vial. A time- and labor-saving product for use with your Agilent Autosampler or any rotating tray automatic sampler. **Note:** Review the Septum Selection Guide to choose the septum best suited for your application.

### Certified 2 mL Screw Top Vial Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear	PTFE/red rubber septa	Blue	100/pk	5182-0553
Clear with write-on spot	PTFE/red rubber septa	Blue	100/pk	5182-0864
Amber with write-on spot	PTFE/red rubber septa	Green	100/pk	5182-0554
Clear	PTFE/silicone/PTFE septa	Blue	100/pk	5182-0555
Clear with write-on spot	PTFE/silicone/PTFE septa	Blue	100/pk	5182-0866
Amber with write-on spot	PTFE/silicone/PTFE septa	Green	100/pk	5182-0556
Clear	PTFE/silicone septa	Blue	100/pk	5182-0557
Clear with write-on spot	PTFE/silicone septa	Blue	100/pk	5182-0865
Amber with write-on spot	PTFE/silicone septa	Green	100/pk	5182-0558
Clear	Pre-slit PTFE/silicone septa	Blue	100/pk	5183-2082
Clear with write-on spot	Pre-slit PTFE/silicone septa	Blue	100/pk	5183-2083



## Certified Screw Top Vial Convenience Packs

Convenience packs are an easy way to get 500 of each component using one part number. Packed in our six-drawer, reusable blue plastic cabinet, 500 vials and caps with septa installed are kept handy and dust-free. **Note:** Review the Septum Selection Guide to choose the septum best suited for your application.

### Certified Screw Top Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear	PTFE/red rubber septa	Blue	500/pk	5182-0732
Clear with write-on spot	PTFE/red rubber septa	Blue	500/pk	5182-0867
Amber with write-on spot	PTFE/red rubber septa	Green	500/pk	5182-0733
Clear	PTFE/silicone/PTFE septa	Blue	500/pk	5182-0736
Clear with write-on spot	PTFE/silicone/PTFE septa	Blue	500/pk	5182-0869
Amber with write-on spot	PTFE/silicone/PTFE septa	Green	500/pk	5182-0737
Clear	PTFE/silicone septa	Blue	500/pk	5182-0734
Clear with write-on spot	PTFE/silicone septa	Blue	500/pk	5182-0868
Amber with write-on spot	PTFE/silicone septa	Green	500/pk	5182-0735
Clear	Pre-slit PTFE/silicone septa	Blue	500/pk	5183-2079
Clear with write-on spot	Pre-slit PTFE/silicone septa	Blue	500/pk	5183-2080
Amber with write-on spot	Pre-slit PTFE/silicone septa	Green	500/pk	5183-2081
Clear	Bonded, pre-slit PTFE/silicone septa	Blue	500/pk	5067-0205



Clear crimp top vials, 5181-3375

## Crimp Top Vials and Closures

The wide opening crimp cap provides a larger target area for improved autosampler needle accuracy. Select from five cap colors and a variety of septa. Whatever your crimp top vial needs, Agilent has what you are looking for.

- Certified for full warranted compatibility with Agilent autosamplers
- 2 mL, 12 x 32 mm
- Available in unique packaging designed to reduce vial breakage
- Tightly controlled crown for improved crimping
- Precision-formed neck for improved autosampler handling
- Rigorous quality assurance provides dimensional consistency from lot-to-lot
- Optional ceramic write-on spot with fill marks

### 2 mL Wide Opening Crimp Top Glass Vials

Description	Certified	100/pk	1000/cs*
Clear	◆	5181-3375	5183-4491
Clear, write-on spot	◆	5182-0543	5183-4492
Amber, write-on spot	◆	5181-3376	5183-4493
<b>Deactivated Vials</b>			
Clear	◆	5183-4494	
Clear, write-on spot	◆	5183-4495	
Amber, write-on spot	◆	5183-4496	
<b>Crimp Top Vials with Fixed Inserts</b>			
Amber, 300 $\mu$ L recommended useable volume		5188-6572	
Clear, 300 $\mu$ L recommended useable volume		9301-1388	

\*Case includes 10 packs of 100 vials

## Crimp Caps with 11 mm Septa

Agilent recommends using certified crimp caps with PTFE/silicone septa to ensure seamless operation with your Agilent autosampler. Agilent certified crimp caps are guaranteed to work with your instrument to reduce autosampler malfunctioning and contamination.

### Crimp Caps with 11 mm Septa

Cap Color	Septa Type	Certified	25/pk	100/pk	500/pk	1000/pk
Silver aluminum	PTFE/silicone/ PTFE septa	◆		5181-1211		5183-4499
	PTFE/silicone septas	◆		5182-0552		5183-4500
	Black Viton septas	◆		5181-1212		
	Thin PTFE septas	◆		5182-0871		
	Thin- membrane rubber septa		5062-3582			
	PTFE/red rubber septa			5181-1210	5061-3370	5183-4498
Blue aluminum	PTFE/red rubber septa			5181-1215		
Green aluminum	PTFE/red rubber septa			5181-1216		
Red aluminum	PTFE/red rubber septa			5181-1217		
Gold aluminum	Magnetic			5188-5386		



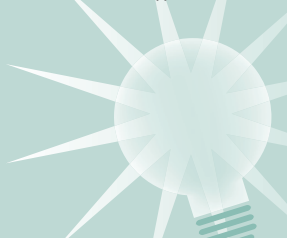
Magnetic crimp caps, 5188-5386

### Crimp Top Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear	PTFE/red rubber septa	Silver aluminum	500/pk	5181-3400
Clear with write-on spot	PTFE/red rubber septa	Silver aluminum	500/pk	5190-2241
Amber with write-on spot	PTFE/red rubber septa	Silver aluminum	500/pk	5181-8801

#### Tips & Tools

Red rubber septa have a tendency to cause needle sticking during sampling. Agilent recommends a 23/26 gauge needle when using red rubber septa. Agilent certified crimp caps are compatible with all needle types.





## Certified Microvolume Inserts

To meet your microsampling needs, Agilent has a variety of microvolume inserts with capacities and designs that can transform our vials from full-capacity to limited volume with one simple step. Microvolume inserts are certified to work with all certified vials for excellent fit with Agilent autosamplers.

### Certified Microvolume Inserts

Description	Unit	Part No.
<b>Conical Inserts with Polymer Feet</b>		
250 µL glass inserts with polymer feet and mandrel interior	100/pk	5181-1270*
250 µL deactivated glass inserts with polymer feet and mandrel interior	100/pk	5181-8872
250 µL polypropylene inserts with polymer feet	100/pk	5182-0549
<b>Conical Glass Inserts</b>		
250 µL pulled-point glass inserts	100/pk	5183-2085
<b>Flat Bottom Inserts</b>		
400 µL glass flat bottom inserts	500/pk	5181-3377
400 µL deactivated glass flat bottom inserts	500/pk	5183-2086
400 µL polypropylene flat bottom inserts	500/pk	5183-2087
Narrow neck inserts	500/pk	9301-1387



250 µL pulled-point glass inserts, 5183-2085



400 µL glass flat bottom inserts, 5181-3377

\*For vortexing or mixing small volume samples, Agilent recommends using 5181-1270 because it provides a secure seal with the cap and septum



Polypropylene vial with glass insert, 9301-0977



Crimp/Snap top polypropylene vial, 250  $\mu$ L, 5188-2788

## Polypropylene Vials

Wide opening 12 x 32 mm vials are manufactured from virgin polypropylene, meeting the requirements of 21 CFR 177.1520. Polypropylene is chemically resistant and the material of choice for pH sensitive samples, sodium or heavy metals analysis. Polypropylene vials are translucent and can be used with crimp or snap caps.

For economical and effective microsampling, choose the polypropylene vial with molded glass flanged insert. Its polypropylene body has a glass flanged insert molded to the inside, so the sample comes in contact only with the 100  $\mu$ L high quality glass insert and the septum. Use with crimp or snap caps.

### Polypropylene Vials

Vial Type	Volume	Certified	100/pk	1000/pk
Polypropylene, crimp/snap top	250 $\mu$ L	◆	5188-2788	9301-0978
Polypropylene, screw top	250 $\mu$ L	◆	5190-2242	5190-2243
Polypropylene, crimp/snap top	250 $\mu$ L			5190-3155
Polypropylene, crimp/snap top	1 mL		5182-0567	
Polypropylene with glass insert, crimp/snap top	250 $\mu$ L		9301-0977	
Polypropylene with glass insert, screw top	250 $\mu$ L		5188-5390	





## Headspace Vials and Closures

Beveled-neck headspace vials are available in both 10 mL and 20 mL capacities, flat or rounded bottom. The 20 mm crimp caps provide a consistently secure seal. Agilent also offers cost-saving convenience packs with vials, caps and septa packaged together.

- Certified for full warranted compatibility with Agilent autosamplers
- Choice of crimp or screw top vials
- Beveled top for maximum secure seal
- Two neck lengths available
- Choice of a pressure safety release cap at 45 psi
- Available in flat or rounded bottom designs



Certified headspace crimp top vials

### Certified Agilent Headspace Crimp Top Vials

Vial Size	Vial Type	Unit	Flat Bottom	Rounded Bottom
20 mL, 23 x 75 mm	Clear	100/pk	5182-0837	5183-4474
	Amber	100/pk	5067-0226	5190-2239
10 mL, 23 x 46 mm	Clear	100/pk	5182-0838	5183-4475
	Amber	100/pk	5067-0227	5190-2238
<b>With Graduation Marks and Write-on Spot</b>				
20 mL, 23 x 75 mm	Clear	100/pk	5190-2286	
	Amber	100/pk	5190-2288	
10 mL, 23 x 46 mm	Clear	100/pk	5190-2285	
	Amber	100/pk	5190-2287	



Aluminum crimp caps, 5183-4477

## 20 mm Headspace Crimp Caps and Septa

Cap Color	Septa Type	Specifications	Certified	100/pk	10,000/pk
<b>20 mm Headspace Crimp Caps with Septa</b>					
Silver aluminum	PTFE/silicone septa	-60°C to 180°C	◆	5183-4477	5190-2257
Silver aluminum with safety feature	PTFE/silicone septa	-60°C to 180°C	◆	5183-4478	
Silver aluminum	Molded PTFE/butyl septa	-40°C to 125°C	◆	5183-4479	5190-2258
Silver aluminum with safety feature	Molded PTFE/butyl septa	-40°C to 125°C		5183-4480	
Silver aluminum	No septa			9301-0721	
Silver aluminum with safety feature	No septa			9301-0718	
Septa only	Gray PTFE/black butyl molded	-40°C to 125°C		9301-0976	
Septa only	Tan PTFE/white silicone	-60°C to 180°C		9301-0719	5067-0234



Headspace vial convenience kit

## Certified Headspace Vial Convenience Kits

Septa Type	Vial Type	Cap Color	Specifications	Unit	Part No.
Molded PTFE/black butyl septa	Flat bottom	Silver aluminum with safety feature	< 125°C	100/pk	5182-0839
PTFE/silicone septa	Flat bottom	Silver aluminum with safety feature	< 180°C	100/pk	5182-0840



## CombiPAL Headspace Vials and Closures

Screw top vials and caps are recommended for the tightest seal and the most reproducible headspace results. CombiPAL headspace vials and caps are precision-thread, making them an excellent choice for dependability and ease-of-use. They are ideal for applications in the environmental, food and beverage, industrial hygiene, drug analysis, and clinical chemistry industries.

### CombiPAL Headspace Screw Top Vials

Vial Size	Vial Type	Unit	Part No.
20 mL, 23 x 75 mm	Clear	100/pk	5188-2753
	Amber	100/pk	5188-6537
10 mL, 23 x 46 mm	Clear	100/pk	5188-5392
	Amber	100/pk	5188-6538

### CombiPAL Ultra Clean 18 mm Screw Top Caps with Septa

Cap Color	Septa Type	Unit	Part No.
Silver aluminum, magnetic	PTFE/silicone septa (top white, bottom blue)	100/pk	5188-2759



## Snap Top Vials and Closures

Snap top vials and caps are the simple, efficient way to a secure seal without crimping. It's as easy as push-on, pull-off. Crimp caps can also be used with wide opening snap top vials.

**Note:** Snap cap vials cannot be pressurized.

- 2 mL, 12 x 32 mm
- Use with any 11 mm snap or crimp cap
- Available in unique packaging designed to reduce vial breakage
- Provides a total seal around the entire circumference of the vial crown
- Precision-formed neck improves autosampler handling
- Optional ceramic write-on spot
- Uniformly flat bottom ensures compatibility with inserts



Snap top vials with fixed inserts

### 2 mL Snap Top Glass Vials

Description	Unit	100/pk	1000/cs*
Clear	100/pk	5182-0544	5183-4504
Clear, write-on spot	100/pk	5182-0546	5183-4505
Amber, write-on spot	100/pk	5182-0545	5183-4506
<b>Deactivated Vials</b>			
Clear	100/pk	5183-4507	
Clear, write-on spot	100/pk	5183-4508	
Amber, write-on spot	100/pk	5183-4509	
<b>Snap Top Vials with Fixed Inserts</b>			
Clear, 300 µL useable volume	100/pk	5188-6593	
Amber, 300 µL useable volume	100/pk	5188-6594	

\*Case includes 10 packs of 100 vials



Snap caps with septa

## Polyethylene Snap Caps with 11 mm Septa

Cap Color	Septa Type	100/pk	500/pk
Clear	Clear PTFE/red silicone septa	5182-0550	
Blue	Clear PTFE/red silicone septa	5182-3458	
Green	Clear PTFE/red silicone septa	5182-3457	
Red	Clear PTFE/red silicone septa	5182-3459	5182-0564
Clear	PTFE/silicone/PTFE septa	5182-0566	
Blue	PTFE/silicone septa	5182-0541	
Clear	Pre-slit PTFE/silicone septa	5183-4511	
Clear	Solid polyethylene membrane septa	5182-0542	
Clear	PTFE septa	5182-0540	

## Snap Top Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear	PTFE/red rubber septa	Clear polypropylene	500/pk	5182-0547
Clear with write-on spot	PTFE/red rubber septa	Clear polypropylene	500/pk	5190-2240
Amber	PTFE/red rubber septa	Clear polypropylene	500/pk	5182-0548

## Specialty Vials and Closures

### High and Extreme Recovery Vials

#### High Recovery Glass Vials

Wide opening, 1.5 mL vials with 30  $\mu$ L reservoir are for sample concentration and injection without transferring to microvolume inserts.



Crimp top vial, high recovery, 5182-3454

#### 1.5 mL Wide Opening High Recovery Glass Vials

Vial Type	Unit	Screw Top	Crimp Top	Snap Top
Clear	100/pk	5183-2030	5182-3454	5183-4510
Clear, silanized	100/pk		5183-4497	
Amber	100/pk	5183-2073		

#### Extreme Recovery Vials

- Uniform internal surface without ridges to hold back sample
- Wider neck opening for easy pipetting
- Increased sample volume capacity versus standard inserts
- Low residual volume for smaller volume injections without using the inserts
- Safe to use with Vortex for sample concentration



Extreme recovery vial, clear, 5185-5821

#### 1.5 mL Crimp Top Extreme Recovery Vials

Description	Part No.
Clear	5185-5821



## Micro-V Vials

- Wide opening, 1.5 mL vials with low residual volume
- Made from first hydrolytical glass Type 1
- Standard 12 x 32 mm dimension
- Compatible with 11 mm crimp closures
- Lower cost alternative to high recovery vials

### Micro-V Vials

Description	Unit	Screw Top	Crimp Top	Snap Top
Clear	100/pk	5184-3550	5184-3551	5184-3552
Amber	100/pk	5184-3554	5184-3555	5184-3556

### Tips & Tools

Don't forget, we have special offers throughout the year.

To learn more, visit [www.agilent.com/chem/specialoffers](http://www.agilent.com/chem/specialoffers)





## 8-425 Screw Top Vials, Closures and Inserts

The original, smaller opening vials with an 8-425 thread size screw cap are available with black caps and a variety of septa to meet the needs of your application.

- 8-425 thread design
- Original, narrow neck size

### 2 mL 8-425 Screw Top Glass Vials

Description	Unit	Part No.
Clear	100/pk	5183-4428
Amber	100/pk	5183-4429
Clear, PTFE-lined storage cap	100/pk	5183-4518
<b>Deactivated Vials</b>		
Clear	100/pk	5183-4432
Amber	100/pk	5183-4433



8-425 screw top vials

### 8-425 Screw Caps and Septa

Cap Color	Septa Type	Unit	Part No.
Black	Red PTFE/white silicone septa	100/pk	5183-4442
Black	No septa	100/pk	5183-4438
Septa only	Red PTFE/white silicone/red PTFE, 8 mm	100/pk	5183-4436
Septa only	Red PTFE/white silicone, 8 mm	100/pk	5183-4437
Septa only	PTFE coated butyl rubber septa	500/pk	9301-1130

### Microvolume Inserts for 2 mL 8-425 Screw Top Vials

Description	Unit	Part No.
<b>Conical Inserts with Polymer Feet</b>		
150 $\mu$ L glass inserts with polymer feet	100/pk	5183-2088
<b>Conical Glass Inserts</b>		
150 $\mu$ L pulled-point interior glass inserts	100/pk	5183-2089
<b>Flat Bottom Inserts</b>		
250 $\mu$ L glass flat bottom inserts	100/pk	5183-2090





4 mL screw top vials

## 4 mL Screw Top Vials and Closures

- 4 mL, 15 x 45 mm
- Precision formed screw threads (13 x 425) for consistently secure seal
- Can be used as wash, waste or storage vials

### 4 mL Screw Top Vials

Description	Unit	Part No.
Clear	100/pk	5183-4448
Clear with write-on spot	100/pk	5067-0246
Amber	100/pk	5183-4450
Amber with write-on spot	100/pk	5067-0247

### Caps and Septa for 4 mL Screw Top Vials

Description	Unit	Part No.
Black 13 x 425 caps, PTFE/silicone septa	100/pk	5183-4464
Black 13 x 425 open top screw caps	100/pk	5183-4461
Diffusion inserts used with black open top screw caps	12/pk	07673-40180
PTFE/natural rubber septa	144/pk	9301-1031
Red PTFE/white silicone septa	100/pk	5183-4460
White virgin PTFE septa	1000/pk	5183-4459

### 4 mL Screw Top Convenience Packs

Description	Unit	Part No.
Clear vials with caps (no septa)	144/pk	9301-0723
4 mL wash vials with fill markings and caps	25/pk	5182-0551



## LC Vials and Closures

Agilent Technologies offers a variety of vials for Agilent's LC instruments. Choose from small volume vials, 2 mL, and 6 mL vials.

### LC Vials and Closures

Description	Certified	Unit	Part No.
<b>6 mL Screw Top Vials and Closures</b>			
Clear, flat bottom	◆	100/pk	9301-1377
Clear, extreme high recovery	◆	30/pk	5188-2757
Screw caps, 16 mm	◆	100/pk	9301-1379
PTFE/silicone septa	◆	100/pk	9301-1378
PTFE/silicone septa, pre-slit	◆	100/pk	5188-2758
<b>5 mL Screw Top Vials</b>			
Clear, high recovery	◆	30/pk	5188-5369
<b>6 mL Crimp Top Vials and Closures</b>			
Clear, flat bottom		100/pk	9301-1419
Crimp caps, 20 mm, PTFE/silicone septa		100/pk	9301-1425



Vial plate, G2255-68700



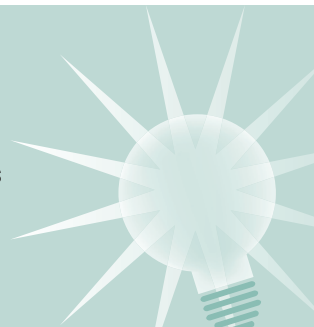
Vial plate, 5022-6539

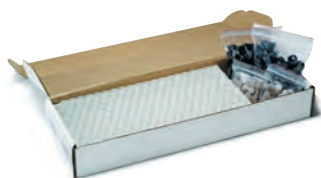
### Vial Plates for 1100/1200 Series Autosamplers and Fraction Collectors

Description	Unit	Part No.
Vial plate for 54 x 2 mL vials	6/pk	G2255-68700
Plate for 27 Eppendorf safe lock tubes, 0.5/1.5/2 mL		5022-6538
Vial plate for 15 x 6 mL vials		5022-6539
Plate for 24 tubes with 18 mm diameter		5042-8544

### Tips & Tools

6 mL high recovery screw top vials are recommended for G2258 Dual Loop and G1367 Well Plate Autosamplers only. 5 mL high recovery screw top vials can be used with all autosamplers.





## General Purpose Sample Storage Vial Kits

Agilent caps and vials are ideal for sampling and storage. Caps are lined with PTFE/silicone for excellent sealability and chemical resistance. All caps include bonded septa that will prevent liner fallout during shipping and sampling. Caps are manufactured of high quality materials to eliminate sample contamination.



Sample storage vial kit, 5183-4324

### General Purpose Sample Storage Vial Kits

Vial Size	Cap Size	Vial Type	Unit	Closed Top	Open Top
4 mL, 15 x 45	13-425	Clear	100/pk	5183-4311	5183-4331
		Amber	100/pk	5183-4321	
12 mL, 19 x 65	15-425	Clear	100/pk	5183-4312	5183-4332
		Amber	100/pk	5183-4322	
22 mL, 23 x 85	20-400	Clear	100/pk	5183-4313	5183-4333
		Amber	100/pk	5183-4323	
40 mL, 28 x 95	24-414	Clear	100/pk	5183-4314	5183-4334
		Amber	100/pk	5183-4324	

### Bonded Caps

Cap Size	Cap Color	Cap Type	Septa Type	Unit	Closed Top	Open Top
13-425	White	Polypropylene	PTFE/silicone liner	100/pk	5183-4301	5183-4305
15-425	White	Polypropylene	PTFE/silicone liner	100/pk	5183-4302	5183-4306
20-400	White	Polypropylene	PTFE/silicone liner	100/pk	5183-4303	5183-4307
24-414	White	Polypropylene	PTFE/silicone liner	100/pk	5183-4304	5183-4308



Electronic crimper

## Crimping and Decapping Tools

### Electronic Crimpers and Decappers

Designed to replace awkward and bulky manual crimping pliers, the Agilent electronic handheld crimpers give tight, reproducible seals every time. Adjustable, slim steel jaws fit around closely spaced vials, enabling you to crimp vials directly in crowded autosampler trays. Using the same handheld design as the crimpers, Agilent's electronic decappers remove caps instantly and are designed for laboratories that recycle or reuse vials.

- Improved design with stronger battery and faster recharging
- Electronic motor-driven design for consistent and reproducible crimping and decapping
- Reduces stress and repetitive motion injuries associated with using manual plier-type crimpers and decappers
- Hand-held, push button operation
- Microprocessor provides electronic adjustment
- Settings are saved when not in use or when battery is changed
- Crimp force can be adjusted for desired tightness of the seals
- Slim, steel jaws fit between closely-spaced vials

#### Electronic Crimpers and Decappers

Description	Part No.
11 mm electronic crimper with 4.8 V rechargeable battery pack and charger	5062-0207
20 mm electronic crimper with 4.8 V rechargeable battery pack and charger	5062-0208
11 mm electronic decapper with 4.8 V rechargeable battery pack and charger	5062-0209
20 mm electronic decapper with 4.8 V rechargeable battery pack and charger	5062-0210
4.8 V nickel metal hydride replacement battery	5188-6565



## Manual Crimpers and Decappers

Agilent's new ergonomic manual crimpers and decappers remove the pain and discomfort of wrist strain with a lightweight, tailored design. Weighing 25-30% less than predecessors and eliminating sore, pinched hands, the new design dramatically improves your experience. Extensively tested with Agilent vials for optimal fit, and color-coded for ease-of-use, this tool is a necessity for every lab. The new crimpers are built for lasting performance: the 11 mm crimper will cap at least 100,000 caps and the 20 mm at least 60,000 before wear starts to impact performance.

- Comfortable, lightweight, ergonomically-designed handles fit smoothly in the hand and eliminate pinching
- Top-mounted adjustment knob shows directionality for tightening/loosening
- Adjustment knob doubles as an indicator that the crimp (or decap) is complete
- Crimpers are color-coded with blue knobs and labels, decappers with orange
- Narrow jaws provide better vertical clearance over vials
- Bottom handle motion allows for better control and enhanced stability of crimping jaw
- Sturdy construction of rugged, fiber-reinforced resin with steel reinforcement in the handles



Ergonomic manual crimper, 5040-4667



Micro vial tray, 5061-3349



Vial rack, 9301-0722



Vial storage container, 5182-0575

### Manual Crimpers and Decappers

Description	Part No.
Ergonomic manual crimper for 11 mm caps	5040-4667
Ergonomic manual decapper for 11 mm caps	5040-4668
Ergonomic manual crimper for 20 mm caps	5040-4669
Ergonomic manual decapper for 20 mm caps	5040-4671
11 mm electronic crimper, manual decapper and cap bundle	5040-4674
Includes 1 electronic crimper for 11 mm caps, 1 manual decapper for 11 mm caps and 100 silvertone aluminum 11 mm caps with PTFE/rubber septa	
20 mm electronic crimper, manual decapper and cap bundle	5040-4675
Includes 1 electronic crimper for 20 mm caps, 1 manual decapper for 20 mm caps and 100 silvertone aluminum 20 mm caps with PTFE/silicone septa	

### Vial Racks

Description	Part No.
Rack for 8 mm, 100 $\mu$ L and 300 $\mu$ L minivials, solid plexiglass, holds 50 vials per rack	5061-3349
Rack for 12 mm, 2 mL vials, holds 50 vials per rack, 5/pk	9301-0722
Vial storage container, holds 50 vials per container	5182-0575

## Syringes

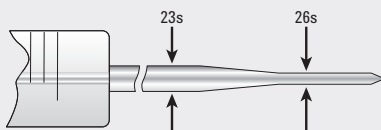
With a broad selection of syringes for manual and auto injectors, Agilent has what you need for accurate and effective sampling.



### Typical Needle Gauge Dimensions

Gauge	OD		ID	
	mm	inches	mm	inches
22	0.71	0.028	0.41	0.016
23s	0.635	0.025	0.11	0.0045
25	0.5	0.02	0.2	0.008
26s	0.47	0.0184	0.11	0.0045

## Needle Gauge



### Tapered Dual Gauge 23-26 or 23s-26s (0.64-0.47 mm)

Durability of a 23-gauge

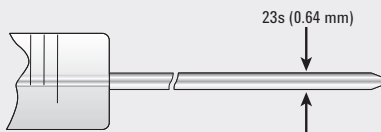
Versatility of a 26-gauge for split/splitless and on-column injection



### Single Gauge 22 (0.71 mm)

HPLC valves

Pipetting liquids

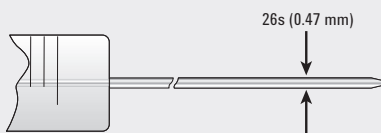


### Single Gauge 23 or 23s (0.64 mm)

Merlin Microseal septa

Packed column injector ports

Split/splitless injector ports



### Single Gauge 26 or 26s (0.47 mm)

Packed column injector ports

Split/splitless injector ports

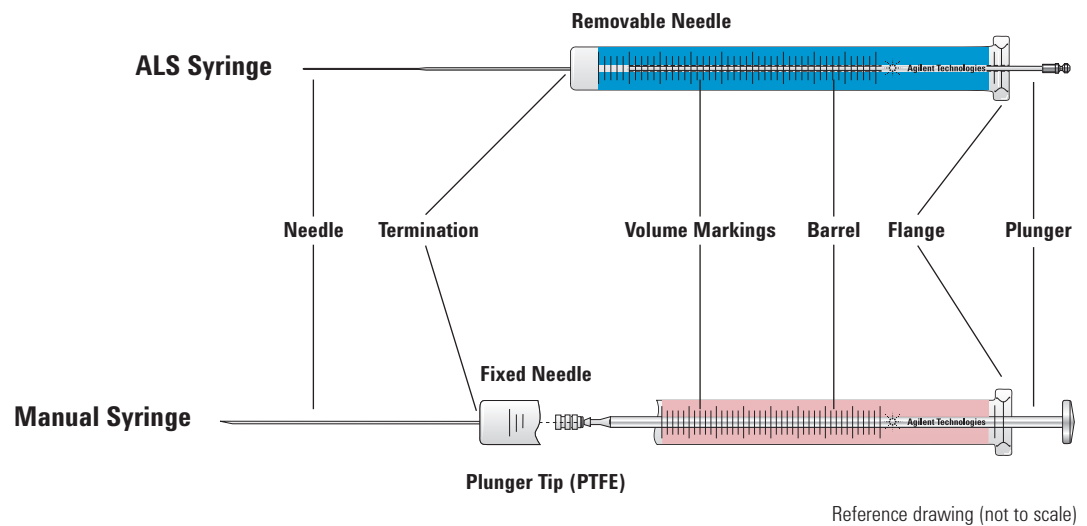
**Note:** Needles with an 'S' following the gauge are more durable, with a thicker needle wall and smaller ID bore.

## Needle Termination

Needle terminations are available in fixed or removable, with various tip styles:

- **Fixed (cemented)** – Economical, reproducible injections for autosamplers
- **Removable needle** – One syringe fixed – many methods, simplicity of fixed needle, but needle can be replaced if damaged or clogged
- **Luer tip** – Easy, fast needle replacement, syringe filter or pump priming, Luer tip is ground glass suitable for mounting chromatographic or PTFE needles, syringes can be autoclaved (without plunger or needle)
- **Luer Lok** – Security of a locked needle, syringe filter or pump priming, PTFE, male Luer taper with nickel-plated brass locking hub for use with KEL-F or metal hub needles and universal connectors

## Syringe Features





## Autosampler Syringes

**Premium autosampler syringes optimize system productivity and ensure precise sample handling**

### Agilent Blue Line Autosampler Syringes for 7693A ALS

Agilent blue line autosampler syringes are specifically designed to support the higher productivity features of the 7693A ALS, while increasing plunger life and reducing costly downtime. Backed by over 40 years of chromatography experience, these meticulously crafted syringes offer:

- Wider range of volumes including exclusive 250 and 500  $\mu\text{L}$  syringes for sample enhancement with the new 7693A
- Precise match with your autosampler's stroking mechanism, resulting in more accurate volume delivered
- Smooth needle that reduces septum coring and keeps your system working at its full potential
- Choice of PTFE-tipped or metal fitted plunger to meet application needs
- Easy-open, environmentally friendly packaging
- Certified compliance with strict Agilent specifications





## Blue Line Autosampler Syringes with Fitted Plungers

Fitted plunger syringes are recommended for homogeneous liquid samples. Each fitted syringe is individually matched with the plunger for precision injection. Plungers are not interchangeable or replaceable.

### Blue Line Autosampler Syringes with Fitted Plungers

Volume (µL)	Description	Unit	Needle	Part No.
0.5	Plunger in needle, fixed		23/42/cone tipped	G4513-80229
	Replacement needle/plunger			G4513-80240
1	Plunger in needle, fixed		23/42/cone tipped	G4513-80215
	Replacement needle/plunger			G4513-80239
5	Straight, fixed		23/42/HP	G4513-80213
	Straight, fixed	6/pk	23/42/HP	G4513-80205
	Straight, fixed		26s/42/HP	G4513-80226
	Straight, fixed	6/pk	26s/42/HP	G4513-80212
	Tapered, fixed		23-26s/42/HP	G4513-80206
	Tapered, fixed	6/pk	23-26s/42/HP	G4513-80201
	Straight, removable		23/42/HP	G4513-80234
	Replacement needle	3/pk	23/42/HP	G4513-80238
	Tapered, removable		23-26s/42/HP	G4513-80224
	Replacement needle	3/pk	23-26/42/HP	G4513-80225
10	Straight, fixed		23/42/HP	G4513-80209
	Straight, fixed	6/pk	23/42/HP	G4513-80202
	Straight, fixed		26s/42/HP	G4513-80216
	Straight, fixed	6/pk	26s/42/HP	G4513-80211
	Tapered, fixed		23-26s/42/HP	G4513-80204
	Tapered, fixed	6/pk	23-26s/42/HP	G4513-80200
	Straight, removable		23/42/HP	G4513-80235
	Replacement needle	3/pk	23/42/HP	G4513-80238
	Removable		23-26s/42/HP	G4513-80218
	Replacement needle	3/pk	23-26/42/HP	G4513-80225
25	Tapered, fixed		23-26/42/HP	G4513-80242
50	Tapered, fixed		23-26/42/HP	G4513-80244



## Blue Line Autosampler Syringes with PTFE-Tipped Plungers

Suitable for gas and liquid samples, the PTFE tip of the plunger creates a tight seal between the plunger and glass, helping to reduce carry-over and increase syringe lifetime. Replacement plungers are available.

### Blue Line Autosampler Syringes with PTFE-Tipped Plungers

Volume (µL)	Description	Unit	Needle	Part No.
10	Straight, fixed		23/42/HP	G4513-80220
	Straight, fixed	6/pk	23/42/HP	G4513-80210
	Tapered, fixed		23-26/42/HP	G4513-80203*
	Replacement plunger for fixed needle			G4513-80227
	Tapered, fixed	6/pk	23-26s/42/HP	G4513-80208
	Straight, removable		23/42/HP	G4513-80219
	Replacement needle	3/pk	23/42/HP	G4513-80236
	Tapered, removable		23-26/42/HP	G4513-80233
	Plunger for fixed needle			G4513-80237
	Replacement needle	3/pk	23-26s/42/HP	G4513-80231
	Replacement plunger for removable needle			G4513-80232
25	Straight, fixed		23/42/HP	G4513-80228
	Tapered, fixed		23-26/42/HP	G4513-80241
50	Straight, fixed		23/42/HP	G4513-80221
	Tapered, fixed		23-26/42/HP	G4513-80223
100	Tapered, fixed		23-26/42/HP	G4513-80243

\*Included in 7693A shipments



## Advanced Sample Enhancement Autosampler Syringes with PTFE-Tipped Plungers

Used with the 7693A optional Enhanced Sample Handling Syringe Carriage, these syringes can eliminate analyst-to-analyst variability and reduce re-work in sample preparation, such as dilution and internal standard addition.

### Advanced Sample Enhancement Autosampler Syringes with PTFE-Tipped Plungers

Volume (µL)	Description	Needle	Part No.
250	Fixed	23/42/HP	G4513-60560
500	Fixed	23/42/HP	G4513-60561



## Gold Standard Autosampler Syringes

Use one needle and get the benefits of two. The upper portion of the tapered needle offers the strength of a 23-gauge needle, while the lower portion at 26s-gauge allows use with split/splitless or on-column injections with 0.53 mm ID columns. All standard plungers are stainless steel.

### Tapered Needle, 23-26s Gauge Autosampler Syringes

Volume (μL)	Description	Unit	Needle	Part No.
5	Tapered, fixed		23-26s/42/HP	5181-1273
	Tapered, fixed	6/pk	23-26s/42/HP	5181-8810
	Tapered, removable		23-26s/42/HP	5182-0835
	Replacement needle for 5 μL syringe	3/pk		5182-0832
10	Tapered, fixed		23-26s/42/HP	5181-1267
	Tapered, fixed	6/pk	23-26s/42/HP	5181-3360
	Tapered, removable		23-26s/42/HP	5181-3321
	Replacement needle for 10 μL syringe	3/pk		5181-3319
	Tapered, fixed, PTFE-tipped plunger		23-26s/42/HP	5181-3354
	Tapered, fixed, PTFE-tipped plunger	6/pk	23-26s/42/HP	5181-3361
	Replacement plunger with PTFE tip for fixed needle 10 μL syringe			5181-3365
	Tapered, removable		23-26s/42/HP	5181-3356
Replacement plunger with PTFE tip for removable needle 10 μL syringe			5181-3358	
50	Tapered, fixed, PTFE-tipped plunger		23-26s/42/HP	5183-0314
100	Tapered, fixed, PTFE-tipped plunger		23-26s/42/HP	5183-2042



## Straight Needle, 23 and 26s Gauge Autosampler Syringes

Volume (μL)	Description	Unit	Needle	Part No.
1	Cone-tipped		23/42/HP	5188-5246
2	Cone-tipped		23/42/HP	5188-5247
5	Straight, fixed		26s/42/HP	9301-0891
	Straight, fixed	6/pk	26s/42/HP	5183-4728
	Straight, fixed		23/42/HP	9301-0892
	Straight, fixed	6/pk	23/42/HP	5182-0875
	Straight, removable		23/42/HP	5182-0834
	Replacement needle for 5 μL syringe	3/pk		5182-0830
10	Straight, fixed		26s/42/HP	9301-0714
	Straight, fixed	6/pk	26s/42/HP	5183-4729
	Straight, fixed		23/42/HP	9301-0713
	Straight, fixed	6/pk	23/42/HP	9301-0725
	Straight, fixed, PTFE-tipped plunger		23/42/HP	5181-8809
	Straight, fixed, PTFE-tipped plunger	6/pk	23/42/HP	5183-4730
	Replacement plunger for 10 μL fixed needle syringe			5181-8808
	Straight, removable		23/42/HP	5181-8806
	Straight, removable, PTFE-tipped plunger		23/42/HP	5181-8813
	Replacement needle for 10 μL syringe	3/pk		5181-8811
Replacement plunger with PTFE tip for removable needle 10 μL syringe			5181-3358	
25	Straight, fixed, PTFE-tipped plunger		23/42/HP	5183-0316
50	Straight, fixed, PTFE-tipped plunger		23/42/HP	5183-0318
100	Straight, fixed, PTFE-tipped plunger		23/42/HP	5183-2058



## 7673/7683 On-Column Autosampler Syringes

Agilent 7673/7683 on-column syringes with needle diameter for columns ranging from 0.25 mm to 0.53 mm are specifically designed for the 7673/7683 Autosampler.

### 7673/7683 On-Column Autosampler Syringes

Volume (μL)	Description	Unit	Part No.
5	Removable needle, barrel only		5182-0836
	Stainless steel needle for 0.53 mm column	3/pk	5182-0832
	Stainless steel needle for 0.32 mm column	3/pk	5182-0831
	Stainless steel needle for 0.25 mm column	3/pk	5182-0833
	Plunger button	10/pk	5181-8866

## HP 7670/71/72 Autosampler Syringes

This syringe has a long needle and regular plunger button for compatibility with HP 7670/71/72 autosamplers. Available with a fixed or removable needle.

### HP 7670/71/72 Autosampler Syringes

Volume (μL)	Description	Needle	Part No.
1	Straight, removable	23/56/2	5182-9622
10	Straight, fixed	23/50/HP	5182-9734
	Straight, removable	23/50/HP	5182-9626
	Straight, fixed, PTFE-tipped plunger	23/50/HP	5182-9799

## Manual Syringes



Agilent color-coded manual syringes allow you to determine syringe volume with one quick glance, so you can more efficiently perform manual dilution, extraction, and sample prep. They also give you the advantages of:

- Improved scale readability with a new vertical syringe scale orientation for more intuitive use
- An easy-access box design that allows you to store syringes right on your lab bench, making it easy to find the volume you need without digging through drawers or unpacking extra cartons
- A wide selection of volumes, making Agilent your "one-stop" resource for all of your sample manipulation needs
- Accuracy within  $\pm 1\%$  of nominal volume, and precision within 1%, measured at 80% of total scale volume
- Earth-friendly cardboard and recyclable plastic packaging that helps reduce landfill waste
- A Certificate of Conformance to ensure the highest quality construction and performance, available for viewing and printing anytime
- Lot-traceable for accurate identification

Of course, all Agilent syringes are backed by over 40 years of chromatography expertise, industry-leading technical support, and a 90-day warranty from the date of shipment.



0.5  $\mu\text{L}$



1.0  $\mu\text{L}$



2.0  $\mu\text{L}$



5.0  $\mu\text{L}$



10  $\mu\text{L}$   
1.0 mL



25  $\mu\text{L}$   
2.5 mL



50  $\mu\text{L}$   
5.0 mL



100  $\mu\text{L}$   
10.0 mL



250  $\mu\text{L}$   
25.0 mL



500  $\mu\text{L}$   
50.0 mL



### Manual Syringes with Fitted Plunger, Fixed and Removable Needle, 0.5 to 5 $\mu$ L

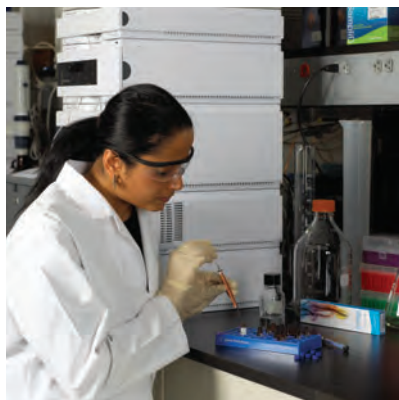
Volume ( $\mu$ L)	Description	Unit	Needle	Part No.
0.5	Plunger in needle, removable		23/70 mm/cone tip	5190-0464
	Replacement needle and plunger kit for 0.5 $\mu$ L syringe			5190-1461
	Plunger in needle, removable		23/70 mm/bevel tip	5190-1460
	Replacement needle and plunger kit for 0.5 $\mu$ L syringe			5190-1462
1	Plunger in needle, removable		26/70 mm/cone tip	5190-1463
	Replacement needle and plunger kit for 1.0 $\mu$ L syringe			5190-1467
	Plunger in needle, removable		26/70 mm/bevel tip	5190-1466
	Replacement needle and plunger kit for 1.0 $\mu$ L syringe			5190-1470
	Plunger in needle, removable		23/70 mm/cone tip	5190-1464
	Replacement needle and plunger kit for 1.0 $\mu$ L syringe			5190-1468
	Plunger in needle, removable		23/70 mm/bevel tip	5190-1465
	Replacement needle and plunger kit for 1.0 $\mu$ L syringe			5190-1469
2	Plunger in needle, removable		23/70 mm/cone tip	5190-1471
	Replacement needle and plunger kit for 2.0 $\mu$ L syringe			5190-1473
	Plunger in needle, removable		26/bevel tip	5190-1472
	Replacement needle and plunger kit for 2.0 $\mu$ L syringe			5190-1474
5	Plunger in needle, removable		23/cone tip	5190-1475
	Replacement needle and plunger kit for 5.0 $\mu$ L syringe			5190-1477
	Plunger in needle, removable		23/70 mm/bevel tip	5190-1476
	Replacement needle and plunger kit for 5.0 $\mu$ L syringe			5190-1478
	Straight, fixed		26/50 mm/bevel tip	5190-1479
	Removable, with flexible plunger		26/50 mm/bevel tip	5190-1481
	Replacement needle for 5.0 $\mu$ L syringe	3/pk		5190-1482



## Manual Syringes with Fitted Plunger, Fixed and Removable Needle, 10 to 500 $\mu$ L

Volume ( $\mu$ L)	Description	Unit	Needle	Part No.
10	Fixed		26/50 mm/bevel tip	5190-1483
	Fixed	10/pk	26/50 mm/bevel tip	5190-1487
	Fixed, with flexible plunger		26/50 mm/bevel tip	5190-1488
	Fixed, with flexible plunger	6/pk	26/50 mm/bevel tip	5190-1489
25	Fixed		25/50 mm/bevel tip	5190-1493
	Removable		25/50 mm/bevel tip	5190-1495
	Replacement needle	3/pk		5190-1496
50	Fixed		25/50 mm/bevel tip	5190-1500
	Removable		25/50 mm/bevel tip	5190-1502
	Replacement needle	3/pk		5190-1496
100	Fixed		25/50 mm/bevel tip	5190-1507
	Removable		25/50 mm/bevel tip	5190-1509
	Replacement needle	3/pk		5190-1496
250	Fixed		25/50 mm/bevel tip	5190-1514
	Removable		25/50 mm/bevel tip	5190-1516
	Replacement needle	3/pk		5190-1496
500	Fixed		25/50 mm/bevel tip	5190-1521
	Removable		25/50 mm/bevel tip	5190-1524
	Replacement needle	3/pk		5190-1496





### Manual Syringes with PTFE-Tipped Plunger, Removable Needle, 10 to 500 $\mu\text{L}$

Volume ( $\mu\text{L}$ )	Description	Unit	Needle	Part No.
10	Removable		25/50 mm/bevel tip	5190-1491
	Replacement needle	3/pk		5190-1496
	Replacement plunger with PTFE tip for 10 $\mu\text{L}$ syringe			5190-1559
25	Removable		25/50 mm/bevel tip	5190-1498
	Replacement needle	3/pk		5190-1496
	Replacement plunger with PTFE tip for 25 $\mu\text{L}$ syringe			5190-1560
50	Removable		25/50 mm/bevel tip	5190-1504
	Replacement needle	3/pk		5190-1496
	Replacement plunger with PTFE tip for 50 $\mu\text{L}$ syringe			5190-1561
100	Removable		25/50 mm/bevel tip	5190-1511
	Replacement needle	3/pk		5190-1496
	Replacement plunger with PTFE tip for 100 $\mu\text{L}$ syringe			5190-1562
250	Removable		25/50 mm/bevel tip	5190-1518
	Replacement needle	3/pk		5190-1496
	Replacement plunger with PTFE tip for 250 $\mu\text{L}$ syringe			5190-1563
500	Removable		25/50 mm/bevel tip	5190-1525
	Replacement needle	3/pk		5190-1496
	Replacement plunger with PTFE tip for 500 $\mu\text{L}$ syringe			5190-1564

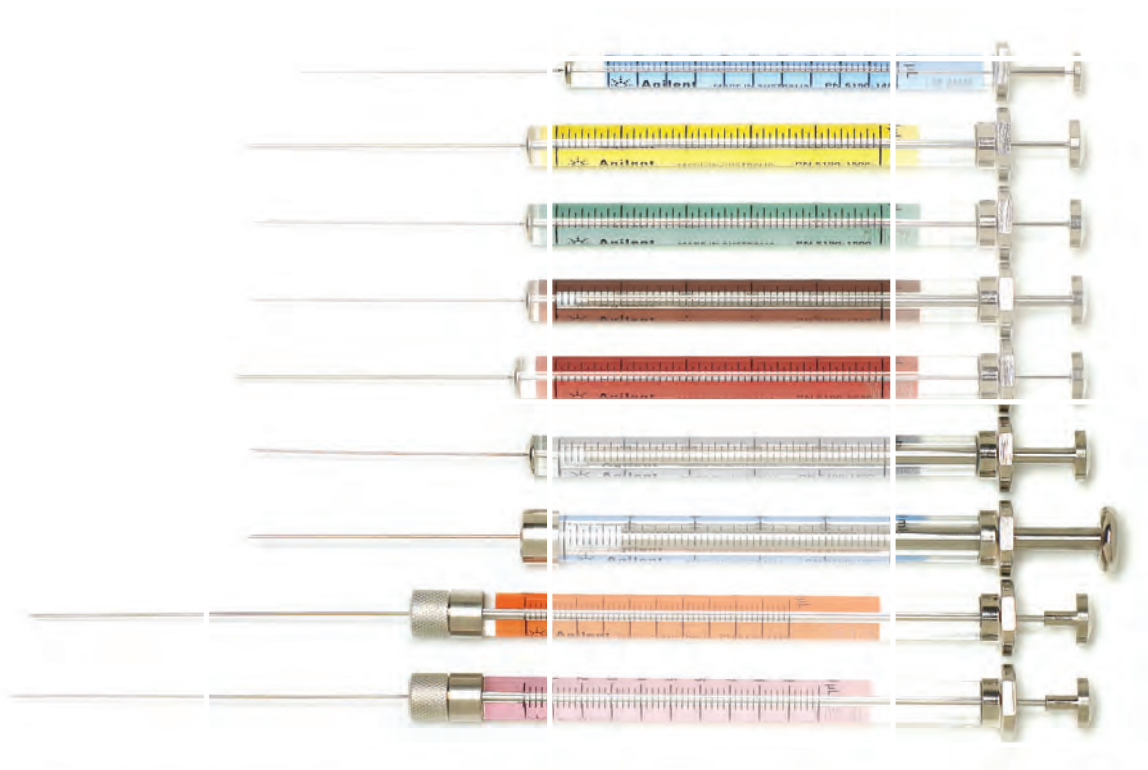


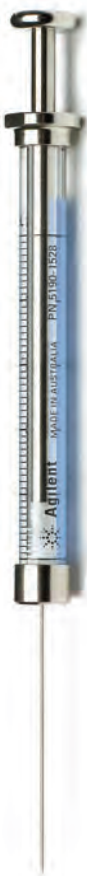
## Manual Syringes with PTFE-Tipped Plunger, Fixed Needle, 10 to 500 $\mu$ L

Volume ( $\mu$ L)	Description	Needle	Part No.
10	Fixed	26/50 mm/bevel tip	5190-1490
	Replacement plunger with PTFE tip for 10 $\mu$ L syringe		5190-1558
25	Fixed	25/50 mm/bevel tip	5190-1497
	Replacement plunger with PTFE tip for 25 $\mu$ L syringe		5190-1560
50	Fixed	25/50 mm/bevel tip	5190-1503
	Replacement plunger with PTFE tip for 50 $\mu$ L syringe		5190-1561
100	Fixed	25/50 mm/bevel tip	5190-1510
	Replacement plunger with PTFE tip for 100 $\mu$ L syringe		5190-1562
250	Fixed	25/50 mm/bevel tip	5190-1517
	Replacement plunger with PTFE tip for 250 $\mu$ L syringe		5190-1563
500	Fixed	25/50 mm/bevel tip	5190-1523
	Replacement plunger with PTFE tip for 500 $\mu$ L syringe		5190-1564

**Manual Syringes with PTFE-Tipped Plunger,  
Removable Needle, 1 mL to 10 mL**

Volume (mL)	Description	Unit	Needle	Part No.
1	Removable		23/50 mm/bevel tip	5190-1529
	Replacement needle	3/pk		5190-1581
	Replacement plunger with PTFE tip for 1 mL syringes			5190-1565
2.5	Removable		23/50 mm/bevel tip	5190-1533
	Replacement needle	3/pk		5190-1581
	Replacement plunger with PTFE tip for 2.5 mL syringes			5190-1572
5	Removable		23/50 mm/bevel tip	5190-1537
	Replacement needle	3/pk		5190-1538
	Replacement plunger with PTFE tip for 5 mL syringes			5190-1573
10	Removable		23/50 mm/bevel tip	5190-1542
	Replacement needle	3/pk		5190-1538
	Replacement plunger with PTFE tip for 10 mL syringes			5190-1574





## Manual Syringes with PTFE-Tipped Plunger, Fixed Needle, 1 mL to 10 mL

Volume (mL)	Description	Needle	Part No.
1	Fixed	22/50 mm/bevel tip	5190-1528
	Replacement plunger with PTFE tip for 1 mL syringes		5190-1565
2.5	Fixed	22/50 mm/bevel tip	5190-1532
	Replacement plunger with PTFE tip for 2.5 mL syringes		5190-1572
5	Fixed	22/50 mm/bevel tip	5190-1536
	Replacement plunger with PTFE tip for 5 mL syringes		5190-1573
10	Fixed	22/50 mm/bevel tip	5190-1541
	Replacement plunger with PTFE tip for 10 mL syringes		5190-1574

## Manual Syringe with PTFE-Tipped Plunger and Luer Lok, 50 to 500 µL

Volume (µL)	Description	Needle	Part No.
50	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1506
	Replacement plunger with PTFE tip for 50 µL syringe		5190-1561
100	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1513
	Replacement plunger with PTFE tip for 100 µL syringe		5190-1562
250	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1519
	Replacement plunger with PTFE tip for 250 µL syringe		5190-1563
500	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1527
	Replacement plunger with PTFE tip for 500 µL syringe		5190-1564



Luer Lok valve, 5190-1531



Luer Lok valve, 5190-1543

### Manual Syringe with PTFE-Tipped Plunger and Luer Lok, 1 to 50 mL

Volume (mL)	Description	Needle	Part No.
1	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1530
	Luer Lok valve	Luer Lok valve/50 mm or 2 in.	5190-1531
	Replacement plunger with PTFE tip for 1 mL syringes		5190-1565
2.5	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1534
	Luer Lok valve	Luer Lok valve/50 mm or 2 in.	5190-1535
	Replacement plunger with PTFE tip for 2.5 mL syringes		5190-1572
5	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1539
	Luer Lok valve	Luer Lok valve/50 mm or 2 in.	5190-1540
	Replacement plunger with PTFE tip for 5 mL syringes		5190-1573
10	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1457
	Luer Lok valve	Luer Lok valve/50 mm or 2 in.	5190-1543
	Replacement plunger with PTFE tip for 10 mL syringes		5190-1574
25	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1544
	Replacement plunger with PTFE tip for 25 mL syringe		5190-1575
	Luer Lok valve	Luer Lok valve/50 mm or 2 in.	5190-1545
	Replacement plunger with PTFE tip for 25 mL syringe		5190-1576
50	Luer Lok	Luer Lok/50 mm or 2 in.	5190-1546
	Luer Lok valve	Luer Lok valve/50 mm or 2 in.	5190-1547
	Replacement plunger with PTFE tip for 50 mL syringes		5190-1577

### Luer Lok and Luer Lok Valve Needles

Description	Unit	Needle	Part No.
Needle	3/pk	23/50/bevel tip	5190-1548
Needle	3/pk	23/50/sidehole tip	5190-1549
Needle	3/pk	22/51/LC tip	5190-1550



## LC Manual Syringes with Fitted Plungers

Volume (μL)	Description	Unit	Needle	Part No.
5	Fixed		22 gauge/2 in./LC tip	5190-1480
10	Fixed		22 gauge/2 in./LC tip	5190-1484
	Removable		22 gauge/2 in./LC tip	5190-1485
	Replacement needle for 10 μL syringe	3/pk		5190-1486
25	Fixed		22 gauge/2 in./LC tip	5190-1494
50	Fixed		22 gauge/2 in./LC tip	5190-1501
100	Fixed		22 gauge/2 in./LC tip	5190-1508
250	Fixed		22 gauge/2 in./LC tip	5190-1515
500	Fixed		22 gauge/2 in./LC tip	5190-1522

## LC Manual Syringes with PTFE-Tipped Plungers

Volume (μL)	Description	Unit	Needle	Part No.
10	Removable		22 gauge/2 in./LC tip	5190-1492
	Replacement needle for 10 μL syringe	3/pk		5190-1486
	Replacement plunger with PTFE tip for 10 μL syringe			5190-1558
25	Removable		22 gauge/2 in./LC tip	5190-1499
	Replacement needle	3/pk		5190-1571
	Replacement plunger with PTFE tip for 25 μL syringe			5190-1560
50	Removable		22 gauge/2 in./LC tip	5190-1505
	Replacement needle	3/pk		5190-1571
	Replacement plunger with PTFE tip for 50 μL syringe			5190-1561
100	Removable		22 gauge/2 in./LC tip	5190-1512
	Replacement needle	3/pk		5190-1571
	Replacement plunger with PTFE tip for 100 μL syringe			5190-1562
250	Removable		22 gauge/2 in./LC tip	5190-1520
	Replacement needle	3/pk		5190-1571
500	Removable		22 gauge/2 in./LC tip	5190-1526
	Replacement needle	3/pk		5190-1571
	Replacement plunger with PTFE tip for 500 μL syringe			5190-1564

## CTC Autosampler Supplies



To better serve Agilent instrument users who choose CTC Analytics autosamplers for high-throughput and flexible sample introduction, Agilent has partnered with CTC to provide a fully integrated system, including CTC approved consumables.

Agilent's portfolio includes a variety of vials, caps, syringes, and well plates compatible with the CTC Analytics HTC PAL, GC PAL, and CombiPAL systems.

### CombiPAL and GC PAL Liquid Injection Syringes

A key feature of CTC's GC PAL and CombiPAL is the ability to inject a wide range of sample volumes, up to 500  $\mu\text{L}$  for LVI applications. The following fixed needle syringes are recommended by CTC to sustain high reproducibility and accuracy.



Fixed needle, G6500-80120

#### CombiPAL and GC PAL Liquid Injection Syringes

Volume ( $\mu\text{L}$ )	Description	Unit	Needle	Part No.
1.2	Fixed needle		26/51/AS	G6500-80113
5	Fixed needle		26/51/AS	G6500-80114
10	Fixed needle		26/51/2	G6500-80115
			26s/51/AS	G6500-80116
	Fixed needle, Merlin & PTV		23s/51/AS	5188-6596
25	Fixed needle		26/51/AS	G6500-80117
	Replacement plunger	10/pk		G4200-80104
100	Fixed needle		26/51/AS	G6500-80118
	Replacement plunger	10/pk		G4200-80105
250	Fixed needle		26/51/AS	G6500-80119
	Replacement plunger	10/pk		G4200-80102
500	Fixed needle		26/51/AS	G6500-80120
	Replacement plunger			G4200-80106



Fixed needle, G6500-80109

## CombiPAL Headspace Supplies

Our fixed needle headspace syringes feature a sideport needle for gas flushing, in conformance with strict CTC standards. Use with Agilent's Merlin Microseal to minimize instrument downtime and to prevent lost or compromised data caused by septum leaks and liner contamination.

### CombiPAL Headspace Syringes

Volume (mL)	Description	Gauge	Part No.
1	Fixed needle	23	G6500-80107
	Replacement plunger		G4200-80101
2.5	Fixed needle	23	G6500-80109
	Replacement plunger		G4200-80107
5	Fixed needle	23	G6500-80111
	Replacement plunger		G4200-80108

### CombiPAL Headspace Supplies

Description	Part No.
Liner, inlet for SPME, deactivated	5188-6471

For vials and caps that work seamlessly with your CTC Analytics PAL Autosamplers, see our complete Vials and Closures section.

Turn to page 51.



## HTS and HTC PAL Liquid Injection Crimp Top Micro Vials and Caps

HTS and HTC PAL high-throughput LC injection systems are configured to cope with today's high-throughput LC/MS demands. Agilent offers a selection of crimp top micro vials designed specifically for HTS and HTC PAL systems.

### HTS and HTC PAL Liquid Injection Crimp Top Micro Vials and Caps

Description	Unit	Part No.
0.8 mL, amber glass, flat bottom	1000/pk	5183-4487
0.1 mL, clear glass, tapered bottom	500/pk	5180-0844
0.3 mL, clear glass, round bottom	500/pk	5180-0841
0.7 mL, amber glass, round bottom	500/pk	5180-0805
0.5 mL, amber glass, conical bottom	500/pk	5180-0806
<b>Micro Caps</b>		
Crimp caps with PTFE/silicone septa	500/pk	5180-0842



## HTS and HTC PAL Liquid Injection Syringes

Designed specifically for CTC autosamplers, these X-type syringes feature zero carryover and a long-lasting plunger for applications that demand precision and productivity. They are strongly recommended for high-throughput applications.

Agilent offers a wide selection of fixed needle, 22-gauge, pointstyle 3 syringes to accommodate a variety of applications.

### HTS and HTC PAL Liquid Injection Syringes



Volume (µL)	Description	Unit	Needle	Part No.
25	X-type fixed needle		22s/51/3	G4200-80117
	Replacement plunger for X-type syringe	3/pk		G4200-80112
50	X-type fixed needle		22/51/3	5188-6485
	Replacement plunger for X-type syringe	3/pk		5188-5395
100	X-type fixed needle, fast aspiration and eject		22/51/3	G4200-80118
	X-type fixed needle, low dead volume		22s/51/3	G4200-80119
	Replacement plunger for X-type syringe	3/pk		G4200-80111
10	Fixed needle		22s/51/3	G4200-80113
	Replacement plunger	10/pk		G4200-80103
25	Fixed needle		22s/51/3	G4200-80114
	Replacement plunger	10/pk		G4200-80104
100	Fixed needle		22/51/3	G4200-80115
	Fixed needle		22s/51/3	G4200-80116
	Replacement plunger	10/pk		G4200-80105
250	Fixed needle		22/51/3	G6500-80102
	Replacement plunger	10/pk		G4200-80102
500	Fixed needle		22/51/3	G6500-80103
	Replacement plunger			G4200-80106
1000	Fixed needle		22/51/3	G6500-80104
	Replacement plunger			G4200-80101
2500	Fixed needle		22/51/3	G6500-80105
	Replacement plunger			G4200-80107
5000	Fixed needle		22/51/3	G6500-80106
	Replacement plunger			G4200-80108

## HTS and HTC PAL Liquid Injection Valve Supplies

Whether your HTS or HTC PAL autosampler uses the Agilent proprietary Rheodyne high-pressure 600 bar injection valve or Valco Cheminert injection valves, Agilent can help you find a sample loop to meet your most challenging applications – including:

- Rheodyne 600 bar injection valve loops, which include high-pressure Swagelok fittings
- Cheminert metal loops, which feature two 1/16 in. stainless steel nuts and two stainless steel ferrules
- Cheminert PEEK loops, which include two PEEK nuts and two PEEK ferrules



Stainless steel loop, 5188-6486



2 µL PEEK loop, 5188-6469



10 µL PEEK loop, 5188-6467

### HTS and HTC PAL Liquid Injection Valve Loops and Needle Seals

Description	Part No.
<b>Rheodyne 600 bar Valve Supplies</b>	
Stainless Steel Loops: Supplied with Swagelok fittings required for high pressure	
5 µL	5188-6486
10 µL	5188-6487
20 µL	5188-6488
50 µL	5188-6489
100 µL	5188-6490
Stator, Rheodyne 600 bar	5188-6491
RheBuild Kit, 600 bar, includes Rotor Seal and 3/32 in. hex wrench	5188-6492
Needle Seals, Rheodyne valve, 600 bar, 10/pk	5188-6478
<b>Cheminert Valve Supplies</b>	
PEEK Loops: Include two PEEK nuts and two PEEK ferrules	
2 µL	5188-6469
5 µL	5188-6470
10 µL	5188-6467
20 µL	5188-6468
Metal Loops: Include two 1/16 in. stainless steel nuts and two stainless steel ferrules	
2 µL	5188-6457
10 µL	5188-6458
50 µL	5188-6460
100 µL	5188-6461
250 µL	5188-6462
500 µL	5188-6463
1000 µL	5188-6464
2000 µL	5188-6465
5000 µL	5188-6466
PEEK Needle Seal, Valco, 22-gauge, 10/pk	5188-6476
PTFE Needle Seal, Valco, 22-gauge, 10/pk	5188-6477

## CTC Autosampler General Supplies

For your convenience, Agilent offers a selection of replacement sampling trays, well plates and sampling accessories for CTC autosamplers.



Well plate foil cutter, 5188-6479



Sample tray, G6500-80101

Description	Part No.
Sample tray, 200 vials, 0.7 or 1 mL	G6500-80100
Sample tray, 98 2 mL or 78 1 mL vials	G6500-80101
Sample tray, 32 10 or 20 mL vials	G6500-80121
Sample tray, 54 2 mL vials, for PAL deep-well stack	G6500-80122
96-well plates, 0.5 mL, polypropylene, 10/pk	5042-1386
96-deep well plates, 1 mL, polypropylene, 50/pk	5042-6454
384-well plates, 90 $\mu$ L, polypropylene, 30/pk	5042-1388
Closing mats for 96-well plates, silicone, pre-slit, fits 96-well plates P/N 5042-1385 and 5042-1386 only, 50/pk	5042-1389
Well plate foil cutter, max 22-gauge needle	5188-6479



## Gas Purification

Impure gases can cause installation delays, premature instrument failure, and flawed results. Purification is one of the most important steps you can take to optimize your system performance.

Agilent brings the highest performance and largest variety of gas purifiers to gas chromatographers. We manufacture purifiers in a variety of sizes and configurations to remove oxygen, moisture, and hydrocarbons. Our product line contains in-line gas purifiers, including refillable, indicating, S-shaped, and metal body types. In-line gas purifiers are designed to remove specific contaminants. We also carry gas purification systems with removable cartridges. Please refer to the following Gas Purifier Selection Guide to determine which gas purifiers you should use.



Gas Clean Filters

## Carrier Gas Purification

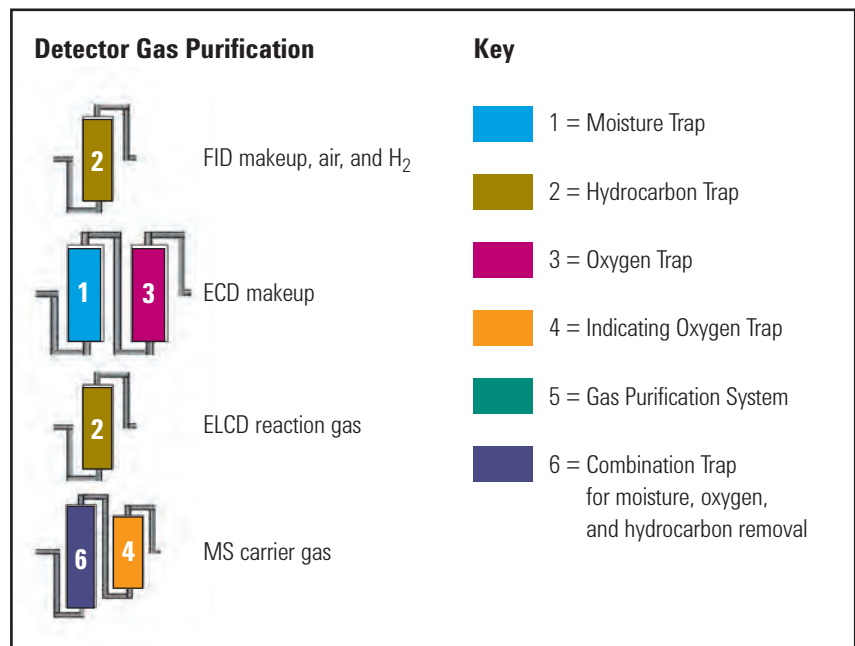
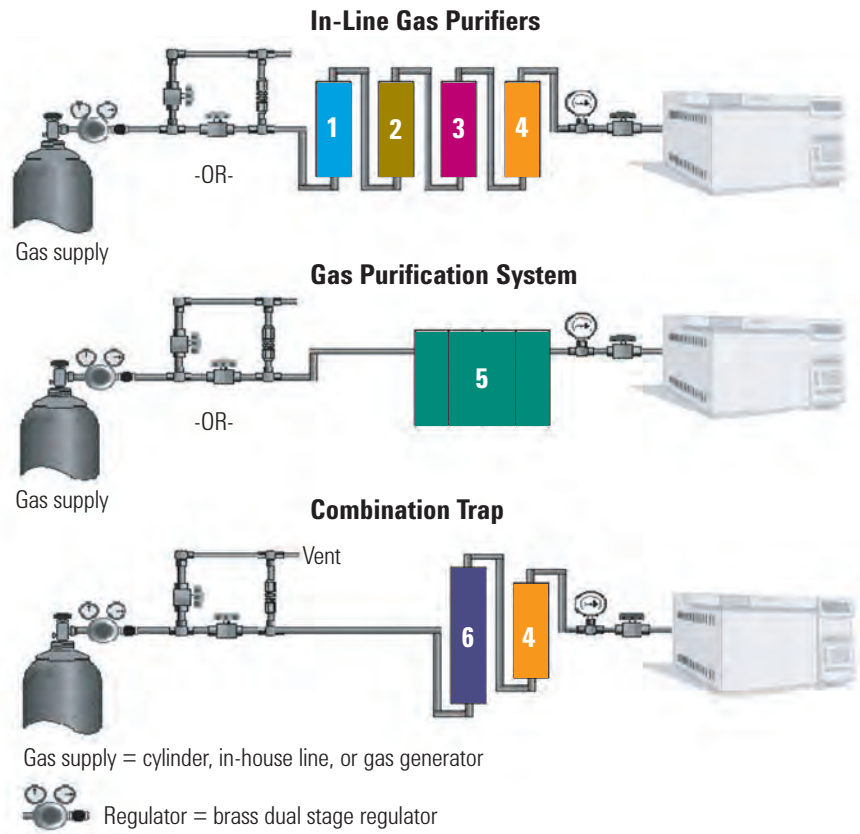
The Carrier Gas Purification illustration shows the most common gas purification configurations used in gas chromatography.

Regardless of which purification system is employed, proper installation and maintenance is required to achieve optimal performance. A purifier that is not maintained will eventually expire and become ineffective, or worse, a source of contamination.

## Helpful Hints for Purification Success

- Determine desired purity level
- Keep number of fittings in gas line to a minimum
- Install purifiers in a convenient location close to the GC
- Use purifier log books to determine maintenance and cartridge replacement schedules
- Use indicating traps closest to the GC so you can determine when to change the traps that are upstream

### Carrier Gas Purification



<b>Gas Purifier Selection Guide</b>					
<b>Contaminant</b>	<b>Description</b>	<b>Series</b>	<b>Unique Features</b>	<b>Refillable</b>	<b>Page No.</b>
<b>Purification Systems</b>					
Multiple	Gas Clean Filter		Highly sensitive indicators with fast, leak free filter replacement	No	88
	Renewable Gas Purification System	G3440	Recyclable high-capacity system filters moisture, oxygen and hydrocarbons in a small, single-cartridge unit, featuring quick changes and easy-to-read dual indicators	Yes	92
	Quick Change + Point of Operation Panel		Cartridges only	No	93
	Super-Clean Gas Filter System		1, 2, 3, or 4 position modular, quick-connect cartridge system with visible indicators	No	94
	High Capacity Gas Purification System	5182/5183	Cartridges only	No	96
<b>In-Line Purifiers</b>					
Moisture (H <sub>2</sub> O)	Economy Indicating Moisture Traps	MT, MT-D, MT-S	Economical plastic "Lexan" body for durability	Yes	100
	Glass Indicating Moisture Traps	GMT, LGMT	Glass body for no moisture diffusion	Yes	103
	S-Traps		Can be reconditioned in GC oven	No	104
	Big Moisture Traps	BMT	Ultra-high capacity for moisture	Yes	104
	Refills for Moisture Traps	MT, MT-D, MT-S GMT, LGMT, BMT	Makes gas purification more economical		100
Oxygen (O <sub>2</sub> )	Indicating Oxygen Traps	IOT, LIOT	Glass construction with plastic safety shield	No	105
	Oxygen Traps	OT1	Economical non-indicating oxygen trap	No	105
	Big Oxygen Traps	BOT	Ultra-high capacity for oxygen	No	106

(Continued)

**Gas Purifier Selection Guide**

Contaminant	Description	Series	Unique Features	Refillable	Page No.
<b>In-Line Purifiers</b>					
Hydrocarbons (HCs)	Hydrocarbon Traps	HT	Economical trap for hydrocarbons	Yes	107
	Big Hydrocarbon Traps	BHT	Ultra-high capacity for hydrocarbons	Yes	107
	S-Traps		Can be reconditioned in GC oven	No	108
	Capillary Grade Hydrocarbon Traps	HT3	High surface area adsorbent, purged with high purity helium	Yes	108
	Refills for Hydrocarbon Traps	HT, BHT, HT3	Makes gas purification more economical		107
Combination Traps	Oxygen/Moisture Trap	OT3	Bi-functional trap, leak-free one-piece design	No	110
	Hydrocarbon/Moisture Trap	HMT	Bi-functional trap, leak-free one-piece design	Yes	112
	Big Universal Trap	RMS	Gas-specific (for purifying He, N <sub>2</sub> , or H <sub>2</sub> ), ultra-high capacity, removes H <sub>2</sub> O, O <sub>2</sub> , HCs, CO, and CO <sub>2</sub> , recommended for GC and GC/MS gas supplies	No	98
	Refill for Hydrocarbon/Moisture Trap	HMT	Makes gas purification more economical		112
<b>Other Purifiers</b>					
Organics	Split Vent Trap	RDT	Cartridge design with durable cartridge holder and replacement cartridges	No	113





Gas Clean Filters

## Gas Purification Systems

### Gas Clean Filters

- Fast, leak-free filter replacement reduces downtime
- Economical, with immediate payback
- Highly sensitive filter indicators provide maximum instrument protection

Our Gas Clean Filter System provides enhanced gas quality for maximum productivity. Clean gases reduce the risk of column damage, sensitivity loss and instrument downtime; contaminants in gases can significantly affect your analysis. Oxygen, hydrocarbons and moisture can cause loss of sensitivity and accuracy of the GC, and damage your column. Impurities activate glass wool in liners and accelerate septa degradation, causing high background signals and ghost peaks, leading to time-consuming troubleshooting. Oxygen in the supply gas for ICP-OES or ICP-MS can cause plasma shutdown and loss of sensitivity. Carbon dioxide in supply gas for TOC analyzers causes elevated baselines and loss of sensitivity and accuracy.

Supply gases can pick up contaminants from every part of the gas line. Therefore, you need a Gas Clean Filter System even if your supply gas is of the highest quality – it is too costly to buy expensive, high purity gases if their quality is downgraded by impurities in the gas line.

Inserting a Gas Clean Filter System in the gas line immediately before the instrument inlet greatly reduces the level of impurities, thus improving trace analysis. Contaminants entering your GC column will also be reduced, which is critical for high temperature analysis and essential for longer column lifetime.



## Benefits of Using Gas Clean Filters

Technique	Filters	Benefit
GC/MS	GC/MS filter	Higher data accuracy and less maintenance
GC column	Moisture filter and oxygen filter	Longer lifetime
ECD detector	Moisture filter and oxygen filter	Greater sensitivity
TCD detector	Moisture filter and oxygen filter	Greater sensitivity and less maintenance
Process GC	Process moisture filter	Long term stability
FID detector	Two charcoal filters (for air and hydrogen)	Greater sensitivity
PID detector	Oxygen filter and charcoal filter	Greater sensitivity
PFPD or FDP detector	Charcoal filter, CO <sub>2</sub> filter and moisture filter	Greater sensitivity
TSD or NPD detector	Charcoal filter, CO <sub>2</sub> filter and moisture filter	Greater sensitivity
Total organic carbon	CO <sub>2</sub> filter and moisture filter	Greater sensitivity
Zero-air generator	CO <sub>2</sub> filter and moisture filter	Cleaner gas
ICP-OES, ICP-MS	High flow connection unit with two oxygen filters	Greater sensitivity

## Gas Clean Filters Technical Specifications

Description	Function	Indicator Color Change	Capacity	Outlet Concentration (at operating flow of 1-10 L/min)
<b>Oxygen Filter</b>	Removes oxygen as well as traces of sulfur and chlorine compounds from carrier gas	From green to gray	150 mL oxygen	< 50 ppm
<b>Moisture Filter/Process Moisture Filter</b>	Removes water, oil and other foreign material from the carrier gas	From green to pale green	7.2 g water	< 0.1 ppm
<b>Charcoal Filter</b>	Removes organic compounds from gas streams	No indicator	Approximately 7 g, depending on impurities	< 0.1 ppm
<b>GC/MS Filter</b>	Single combination filter, removes water, oxygen and organic compounds	Oxygen, from green to gray; Moisture, from green to pale brown	100 mL oxygen, 1 g water, organics depending on impurities	Oxygen < 50 ppb Moisture < 0.1 ppm Organics < 0.1 ppm
<b>CO<sub>2</sub> Filter</b>	Removes CO <sub>2</sub> from the gas stream; use with moisture filter	From white to violet	9 g CO <sub>2</sub>	< 1 ppm

**Gas Clean Filters**

<b>Description</b>	<b>Part No.</b>
Gas Clean filter kit, connecting unit for four filters Includes four filters, 1/4 in. tube, oxygen, moisture and 2x charcoal	CP7995
Gas Clean filter kit, connecting unit for four filters Includes four filters, 1/8 in. tube, oxygen, moisture and 2x charcoal	CP736530
Gas Clean GC/MS filter kit Includes one connecting unit 1/8 in. and two GC/MS filters	CP17976
Gas Clean GC/MS filter kit Includes one connecting unit 1/4 in. and two GC/MS filters	CP17977
Gas Clean GC/MS filter installation kit Includes CP17976, 1 m copper tubing, two nuts and two ferrules 1/8 in.	CP17978
CO <sub>2</sub> kit, 1/4 in. Includes 2-position connecting unit, CO <sub>2</sub> and moisture filters	CP17982
CO <sub>2</sub> kit, 1/8 in. Includes 2-position connection unit, CO <sub>2</sub> and moisture filters	CP17983

**Replacement Gas Clean Filters**

<b>Description</b>	<b>Part No.</b>
Gas Clean CO <sub>2</sub> filter	CP17969
Gas Clean oxygen filter	CP17970
Gas Clean moisture filter	CP17971
Gas Clean process moisture filter	CP17971P
Gas Clean charcoal filter	CP17972
Gas Clean GC/MS filter	CP17973

**Replacement Supplies**

<b>Description</b>	<b>Part No.</b>
1 filter, 1/4 in. tube	CP7980
1 filter, 1/8 in. tube	CP7988
2 filters, 1/4 in. tube	CP738406
2 filters, 1/8 in. tube	CP738407
4 filters, 1/4 in. tube	CP7989
4 filters, 1/8 in. tube	CP736520
1 filter, stainless steel, 1/4 in. tube	CP7980P4
1 filter, stainless steel, 1/8 in. tube	CP7988P8
1 filter, stainless steel, 3 mm tube	CP7988P3
1 filter, stainless steel, 6 mm tube	CP7980P6
High flow connecting unit, 1/4 in.	CP17984
High flow connecting unit 1/8 in.	CP17985
Wall mounting bracket for connecting unit For CP7980 and CP7988	CP7981
TCD filter kit	CP738408
Includes oxygen and moisture filter	
Upper part filter connecting unit	CP7978
Flush head for connecting unit	CP7987
Male connector, 1/4 in. with dust filter	CP7986
Male connector, 1/8 in. with dust filter	CP82117
Male connector, stainless steel, 1/4 in. with dust filter	CP7986SS
Male connector, stainless steel, 1/8 in. with dust filter	CP82117SS
Male connector, stainless steel, 3 mm with dust filter	CP82117SS3
Male connector, stainless steel, 6 mm with dust filter	CP7986SS6
Viton O-rings, two sets	CP7983



Renewable gas purification system (left) and recycled cartridge (right)

## Renewable Gas Purification System

The Renewable Gas Purification System from Agilent not only traps large quantities of contaminants and lasts a long time, but it is also recyclable. With average use, you'll only need to purchase a replacement cartridge once per year or after approximately 20 cylinders' worth of purification. When you need a replacement, you have the option to purchase a new or recycled cartridge. Recycled cartridges are refilled and certified to the full specifications of the new cartridges.

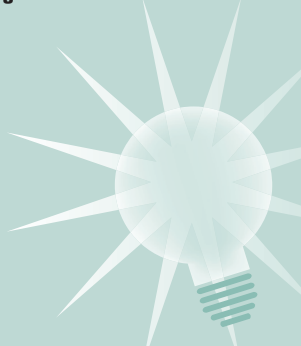
- Agilent's highest capacity and most economical purification system
- All cartridges are environmentally friendly and reduce waste
- High capacity – 850 cc or more oxygen filtration, 12 g H<sub>2</sub>O, and approximately 8 g hydrocarbon filtration per cartridge – in a compact footprint
- Improves 99.995% gas purity to 99.9995% purity
- Dual indicators make it easy to see the purification results
- Labeling displays indicator color and shape for accurate reading
- Simple twist on/off knob and guide rod make cartridge changes quick and easy
- One renewable gas purifier system can support up to four GC systems
- Designed with efficiency, safety, and environmental responsibility in mind
- All replacement cartridges include return packaging and instructions

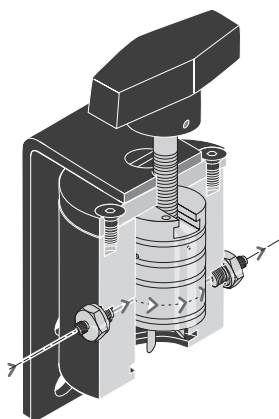
### Renewable Gas Purification System

Description	Part No.
Renewable gas purifier system startup kit Includes one G3440-80007 base, one G3440-60003 renewable gas purifier cartridge, wall or bench mount hardware, and instruction manual	G3440-60004
Renewable gas purifier cartridge, new	G3440-60003
Renewable gas purifier cartridge, recycled	G3440-69003
Renewable gas purifier system, base only	G3440-80007
Return packaging set	5190-1414
For return of G3440-60003 or G3440-69003 renewable gas purification cartridge when original packaging is lost or damaged	

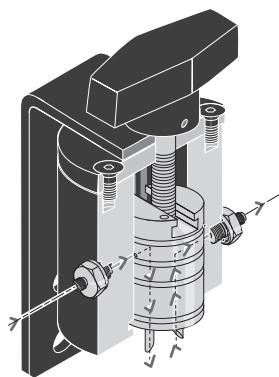
#### Tips & Tools

For more information about the Renewable Gas Purification System, visit [www.agilent.com/chem/renewable](http://www.agilent.com/chem/renewable)





a



b

**Figures a and b.** The "plus" valve (a) features a closed gas path when changing cartridges. When placed in the down position (b), the "plus" valve shifts gas through the cartridge.

## QC+ Point of Operation Panels

QC+ Point of Operation Panel purifier cartridges can be quickly changed – that's the QC. The cartridges are removed from the panel without interruption of gas flow to the system – that's the + – drastically minimizing costly instrument downtime – and that's a real +.

Filter cartridges are of all metal or glass construction, eliminating infusion and resultant signal noise associated with filters constructed from plastics. Cartridges are quickly installed via a simple knurled retaining nut. No wrenches are needed! As many as four cartridges can be replaced in a matter of seconds, and because there is low dead volume, a minimal amount of gas system purge is required after installation.

### Replacement Cartridges

Description	Capacity	Efficiency	Part No.
High capacity oxygen	396 mg	< 15 ppb	GC-1
High capacity moisture	15 g	< 9 ppb	GC-2
Indicating moisture	7 g	< 9 ppb	GC-2-I
Hydrocarbon	8 g	< 30 ppb	GC-3
Indicating oxygen	40 mg	< 2 ppb	GC-4
Replacement O-ring set			R2D2-ORINGS

## Super Clean Gas Purification Systems

Super Clean gas filter systems are designed to provide convenience and reduce contamination. During cartridge replacement, check valves close off the system to the atmosphere, further minimizing the entry of contaminants. Maximum pressure is 150 psi (11 bar).

- Triple filter cartridge for carrier gas purification with a single cartridge
- Fuel gas filter for removal of hydrocarbons and moisture from FID fuel gases
- The filter's gas flow path is made from high quality glass and stainless steel
- Filters can be changed easily without tools

### Specifications

Max pressure	150 psi (11 bar)
Dimensions	33 cm x 31 cm x 11 cm – 4 filter system
Weight	8 kg
Purity Level	< 0.1 ppm at max flow rate of 2 L/min (max pressure 10 bar)



Triple filter cartridge, 5182-9705

### Super Clean Gas Purification Systems

Description	Part No.
FID Gas Purification System Dedicated three-position system for purifying all gases used in an FID-equipped GC; includes triple filter cartridge for carrier gas, and 2 fuel gas filter cartridges for both hydrogen and zero air	5182-9703
Carrier Gas Purification System Single-position system for GC/MS, ECD and NPD detectors; includes triple filter cartridge.	5182-9704
Super Clean Gas Purification System Includes four-position baseplate manifold with 4 filter cartridges: oxygen and moisture (both with indicator), and 2 hydrocarbon cartridges	5182-0816
FID Fuel Gas Purification System Two-position system dedicated to purifying the incoming hydrogen and zero grade air directly at your FID-equipped GC	5183-4774
GC/MS assembly for He (gas specific) Includes 1 filter/base plate, triple cartridge (O <sub>2</sub> /Moisture/Charcoal)	5188-6475
Wall mount bracket for Super Clean Gas Purification System	5182-0821
O-ring kit 8/pkg, four each of two sizes	5182-3423

### Super Clean Replacement Filter Cartridges

Description	Part No.
Triple filter cartridge A single carrier gas filter with hydrocarbon, moisture, and oxygen trapping capability; includes moisture and oxygen indicator	5182-9705
Fuel Gas Filter Cartridge Combination hydrocarbon and moisture trap with moisture indicator; ensures the highest quality hydrogen and zero air for your FID	5183-4771
Moisture filter cartridge with indicator	5182-0817
Oxygen filter cartridge with indicator	5182-0818
Hydrocarbon filter cartridge	5182-0820
Filter cartridge bundle of 4 Includes 1 each of oxygen and moisture, and 2 hydrocarbon	5183-4770
FID filter cartridge bundle Includes 1 Triple Filter Cartridge and 2 Fuel Gas Filter Cartridges	5183-4769
GC filter, triple, gas specific for He (O <sub>2</sub> /Moisture/Charcoal) for GC/MS	5188-6474



High capacity gas purification replacement cartridge

## High Capacity Gas Purification Replacement Cartridges

The High Capacity Gas Purification system has been discontinued. Replacement cartridges for the High Capacity Gas Purification system are still available.

### High Capacity Gas Purification Replacement Cartridges

Description	Part No.
<b>Replacement Cartridge Kit</b>	
Replacement cartridge kit for three-cartridge system (H <sub>2</sub> O/hydrocarbon, oxygen and indicating O <sub>2</sub> )	5182-9780
<b>Detector-Specific Purifiers</b>	
FID Purifier, 1/8 in. fittings	5182-9793
Includes two hydrocarbon/moisture cartridges with separate connections for air and hydrogen lines	
<b>Individual Cartridge Filters and Replacement Cartridges</b>	
Moisture/hydrocarbon replacement cartridge	5182-9777
Oxygen replacement cartridge	5182-9778
Indicating oxygen replacement cartridge	5182-9779
Moisture only replacement cartridge	5182-9792
Hydrocarbon only replacement cartridge	5182-9791
Triple combination replacement cartridge for single-cartridge system	5183-4600



## In-Line Gas Traps

The purpose of gas traps is to remove detrimental impurities from carrier and detector gases. Combination traps are available which remove moisture, oxygen and/or organics with a single trap. The effectiveness of the traps depends on the initial quality of the gas.

Constant exposure of capillary columns to oxygen and moisture, especially at high temperatures, results in rapid and severe column damage. The use of oxygen and moisture traps for the carrier gas may extend column life and protect the instrument. Any moisture or oxygen introduced into the gas stream due to a leak will be removed by the trap until it expires.

<b>Oxygen Removal</b>		
<b>Type of Trap</b>	<b>Removal Capacity (mg)</b>	<b>Performance (ppb)</b>
OT3 series	600.0	15
IOT series	30.0	2
LIOT series	100.0	1
OT3 + IOT	630.0	2
GC-1	396.0	5
GC-4	40.0	2
RBC series	436.0	2
RQC series	436.0	2
BOT series	3400.0	1



Big universal trap

### Big Universal Traps

Big Universal Traps utilize a layered, multi-adsorbent bed packing of the most effective, highest capacity adsorbent materials available today for the removal of oxygen, moisture, hydrocarbons, carbon dioxide and carbon monoxide from helium gas streams. The volume of the various adsorbent materials in the Big Universal Trap was developed through rigorous testing and evaluation in order to ensure that breakthrough of the five major contaminant groups occurs as simultaneously as possible as each material achieves complete saturation.

One Big Universal Trap unit will easily purify the contents of thirteen "K" size cylinders of 99.997% purity helium to a cumulative level of 100 ppb of O<sub>2</sub>, H<sub>2</sub>O, CO<sub>2</sub>, CO and hydrocarbons at a flow rate of up to 8 L/min. All tube fittings are Swagelok stainless steel, fitted with 40 μm stainless steel frits for particulate control. Maximum pressure is 500 psi.

Big Universal Traps are more economical than other purifiers, offering nearly three times the capacity.

Big Universal Traps are ideal for any GC or GC/MS application where helium is employed and assurance of purity is essential. Combining the contents of three individual in-line traps into a single unit reduces the number of potential leaks and the possibility of aspirating contaminants into the gas stream. A single purifier also simplifies installation and replacement.

**Capacity Data**

<b>High Purity Helium-99.997%</b>		<b>Removal Capacity</b>
O <sub>2</sub>	< 5 ppm	1.07 L
THC*	< 1 ppm	20 g
H <sub>2</sub> O	< 5 ppm	46 g

\*Total Hydrocarbons, analysis limited to three contaminate groups

**Effluent Concentration**

<b>Research Grade Helium-99.9999%</b>			
Impurities	< 1 ppm	H <sub>2</sub> O	< 0.2 ppm
N <sub>2</sub>	< 0.5 ppm	H <sub>2</sub>	< 0.2 ppm
O <sub>2</sub>	< 0.5 ppm	Ar	< 0.1 ppm
THC*	< 0.1 ppm	Ne	< 0.5 ppm
CO+CO <sub>2</sub>	< 0.1 ppm		

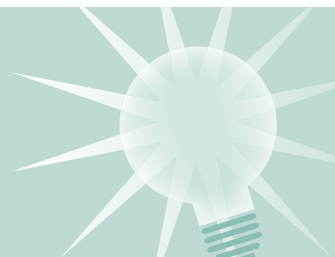
\*Total Hydrocarbons, analysis limited to three contaminate groups

**Big Universal Traps (RMS Series)**

<b>Description</b>	<b>1/8 in. Part No.</b>	<b>1/4 in. Part No.</b>
Hydrogen	RMSHY-2	RMSHY-4
Helium (Ar/Me)	RMSH-2	RMSH-4
Nitrogen	RMSN-2	RMSN-4
<b>Trap Mounting Clips</b>		
Big Mounting Clip, 2/pk	UMC-5-2	UMC-5-2

**Tips & Tools**

Big universal traps have nearly three times the capacity of other purifiers.





Refillable moisture trap MT120

## Moisture Traps

### Economy Indicating Refillable Moisture Traps

Agilent Indicating Moisture Traps are designed to remove water, oil, and organics from gases employed in, but not limited to, gas chromatography. Refillable moisture traps are constructed from Lexan polycarbonate tubing. Lightweight, chemically resistant and of superior strength when compared to traps manufactured from acrylic, Agilent Indicating Moisture Traps have become the chromatographer's choice for water adsorption from GC gases.

- Available in three refillable sizes and three different packings
- Both inlet and outlet connectors are equipped with stainless steel frits to prevent particulates from entering the gas stream
- Mixed packing bed makes improper installation impossible
- Easily refillable
- Tested to 125 psi (helium)

### Molecular Sieve 13X and Indicating 4A (MT Series)

- Preferred adsorbent for GC gas drying
- Blue indicating sieve turns buff at 20% relative humidity

#### Molecular Sieve 13X and Indicating 4A (MT Series)

Description	Size (cc)	Removal Capacity (g)	Max. Effluent H <sub>2</sub> O Concentration (ppb)	1/8 in. Part No.	1/4 in. Part No.
Refillable Moisture Trap	120	21.6	20	MT120-2	MT120-4
Refillable Moisture Trap	200	36.0	18	MT200-2	MT200-4
Refillable Moisture Trap	400	72.0	14	MT400-2	MT400-4

#### Refills and Mounting Clips

Adsorbent Refill (1 pint) for MT Series	MSR-1	MSR-1
Mounting clip for 120 and 200 cc traps	MC-1	MC-1
Universal mounting clip for 400 cc traps	UMC-4	UMC-4

## Molecular Sieve 5A and Indicating Drierite (MT-D Series)

- High moisture capacity
- Simultaneously removes hydrogen sulfide and oil
- Indicating Drierite changes dramatically from bright blue to pink as the gas stream approaches 40% relative humidity

### Molecular Sieve 5A and Indicating Drierite (MT-D Series)

Description	Size (cc)	Removal Capacity (g)	Max. Effluent H <sub>2</sub> O Concentration (ppb)	1/8 in. Part No.	1/4 in. Part No.
Refillable Moisture Trap	120	21.6	22	MT120-2-D	MT120-4-D
Refillable Moisture Trap	200	36.0	20	MT200-2-D	MT200-4-D
Refillable Moisture Trap	400	72.0	16	MT400-2-D	MT400-4-D
<b>Refills and Mounting Clips</b>					
Adsorbent Refill (1 pint) for MT-D Series				MSR-2	MSR-2
Mounting clip for 120 and 200 cc traps				MC-1	MC-1
Universal mounting clip for 400 cc traps				UMC-4	UMC-4



Refillable Moisture trap MT400

## Silica Gel, Grade 40, and Indicating Silica Gel, Grade 48 (MT-S Series)

- Highest moisture capacity adsorbent
- Adsorbs as much as 40% of its weight in water
- High affinity for hydrocarbons
- Blue indicating gel turns from a deep blue to pale pink at 40% relative humidity

### Silica Gel, Grade 40, and Indicating Silica Gel, Grade 48 (MT-S Series)

Description	Size (cc)	Removal Capacity (g)	Max. Effluent H <sub>2</sub> O Concentration (ppb)	1/8 in. Part No.	1/4 in. Part No.
Refillable Moisture Trap	120	31.5	40	MT120-2-S	MT120-4-S
Refillable Moisture Trap	200	52.5	39	MT200-2-S	MT200-4-S
Refillable Moisture Trap	400	105.0	39	MT400-2-S	MT400-4-S
<b>Refills and Mounting Clips</b>					
Adsorbent Refill (1 pint) for MT-S Series				SGR	SGR
Mounting clip for 120 and 200 cc traps				MC-1	MC-1
Universal mounting clip for 400 cc traps				UMC-4	UMC-4



Glass indicating moisture trap



Refillable glass moisture trap

### Glass Indicating Moisture Traps (GMT and LGMT Series)

Ideal for GC/MS Systems, Electron Capture Detectors, and Electrolytic Conductivity Detectors

- Molecular Sieve 13X and a band of Indicating Molecular Sieve 4Å
- Available in 70 cc, 100 cc and 250 cc sizes
- Heavy wall borosilicate glass tube – no moisture diffusion
- Refillable

The 100 cc unit will treat 10 standard "A" cylinders with up to 30 ppm water or 16.3 g to less than 10 ppb. Molecular sieves differ from all other commercially available adsorbents, as they have an extremely high adsorption capacity for water and polar compounds, even at relatively low concentrations. The color change takes place in the middle of the trap bed, giving ample warning. In addition to the inherent qualities of the sieve material, we treat the bed material under high vacuum and heat to ensure maximum scrubbing efficiency and capacity.

#### Glass Indicating Moisture Traps (GMT and LGMT Series)

Description	Size (cc)	Removal Capacity (g)	Max. Effluent H <sub>2</sub> O Concentration (ppb)	1/8 in. Part No.	1/4 in. Part No.
Glass Indicating Moisture Trap	70	11.4	7	GMT-2GC-HP	GMT-4GC-HP
Glass Indicating Moisture Trap	100	16.3	6	GMT-2-HP	GMT-4-HP
Glass Indicating Moisture Trap	250	40.09	6	LGMT-2-HP	LGMT-4-HP
<b>Refills and Mounting Clips</b>					
Molecular Sieve Refill for GMT and LGMT Series				GMSR	GMSR
Mounting clip for 70 and 100 cc traps				UMC-3	UMC-3
Universal mounting clip for 400 cc traps				UMC-4	UMC-4



Moisture S-trap

## Moisture Removal S-Traps

- Contains Molecular Sieve 5Å, 45/60 mesh
- Can be reconditioned

### Moisture Removal S-Traps

Description	Part No.
Moisture S-trap, preconditioned, 1/8 in. fittings*	5060-9084
Moisture S-trap, unconditioned, 1/8 in. fittings	5060-9077

\*Traps can be reconditioned by heating at a minimum of 350°C, with flow for 6 hours



Big moisture trap

## Big Moisture Traps (BMT Series)

- Capacity: 130 g H<sub>2</sub>O
- Pressure: Up to 250 psig
- Efficiency: reduction of H<sub>2</sub>O to less than 5 ppb
- 750 cm<sup>3</sup> gas purifiers
- Ideal for bulk purification applications or where several instruments are plumbed from a single gas source
- One piece of heavy-walled aluminum tube eliminates potential leaks
- Equipped with sintered stainless steel frits to prevent particulate contamination
- Refillable

### Big Moisture Traps (BMT Series)

Description	Size (cc)	1/8 in. Part No.	1/4 in. Part No.
Big Moisture Trap	750	BMT-2	BMT-4
<b>Refills and Mounting Clips</b>			
Refill for Big Moisture Trap (enough for 2 refills)		BMSR-1	BMSR-1
Big Mounting Clip, 2/pk		UMC-5-2	UMC-5-2



## Oxygen Traps

### Indicating Oxygen Traps

- Reduces oxygen to less than 1 ppb
- Environmentally safe
- Available in two sizes: standard and large – three times the capacity

This trap removes the oxygen rather than converting it to another form of contamination.

Oxygen and a wide range of oxides react with the activated bed material to form a manganese oxide. This reaction results in a progressive and dramatic color change, from light green in the adsorbent's active state to deep brown as oxygen saturation occurs. The Indicating Oxygen Trap is designed to be used in conjunction with any of our high capacity, non-indicating oxygen traps. When properly installed downstream from the non-indicating trap, the Indicating Oxygen Trap provides a visual indication of oxygen breakthrough BEFORE contamination reaches sensitive system components.

Unlike adsorbent materials utilized in competitive products, our indicating media can be exposed to air and water in virtually any quantity without resulting in an exothermic reaction. The spent product is non-toxic, non-hazardous, non-flammable, and non-reactive. The high impact Lexan shield prevents "lab catastrophes" if the trap is exposed to pressure beyond its stated pressure limit. Safe for land-fill refuse.

#### Indicating Oxygen Traps



Economy non-indicating oxygen trap

Description	Size (cc)	Removal Capacity (g)	1/8 in. Part No.	1/4 in. Part No.
<b>Indicating Oxygen Traps (IOT and LIOT Series)</b>				
Indicating Oxygen Trap	30	50 cm <sup>3</sup>	IOT-2-HP	IOT-4-HP
Large Indicating Oxygen Trap	150	120 cm <sup>3</sup>	LIOT-2	LIOT-4
<b>Economy Non-Indicating Oxygen Traps (OT1 Series)</b>				
Oxygen Trap	70		OT1-2	OT1-4
<b>Trap Mounting Clips</b>				
Mounting clip for IOT traps			UMC-2	UMC-2
Mounting clip for LIOT traps			UMC-3	UMC-3
Mounting clip for OT1 traps			MC-1	MC-1



Big oxygen trap

## Big Oxygen Traps (BOT Series)

- Capacity: 3 L O<sub>2</sub> or 3.2 g
- Pressure: Up to 250 psig
- Efficiency: reduction of O<sub>2</sub> to less than 1 ppb
- 750 cm<sup>3</sup> gas purifiers
- Ideal for bulk purification applications or where several instruments are plumbed from a single gas source
- One piece of heavy-walled aluminum tube eliminates potential leaks
- Equipped with sintered stainless steel frits to prevent particulate contamination

### Big Oxygen Traps (BOT Series)

Description	Size (cc)	1/8 in. Part No.	1/4 in. Part No.
Big Oxygen Trap	750	BOT-2	BOT-4
<b>Trap Mounting Clips</b>			
Big Mounting Clip, 2/pk		UMC-5-2	UMC-5-2



Big hydrocarbon trap

## Hydrocarbon Traps

### Hydrocarbon Traps (HT Series)

- Remove organics from carrier gases, air and hydrogen
- High capacity – 200 cc of filtering media
- Impregnated carbon filter media
- Mounting Panel
- Refillable

#### Hydrocarbon Traps (HT Series)

Description	Size (cc)	1/8 in. Part No.	1/4 in. Part No.
Hydrocarbon Trap	200	HT200-2	HT200-4
<b>Refills and Mounting Clips</b>			
Adsorbent Refill (1 pint), 2 recharges for Hydrocarbon Trap		ACR	ACR
Mounting clip for HT200 Series		MC-1	MC-1

### Big Hydrocarbon Traps (BHT Series)

#### Recommended for use with Agilent LC/MS Systems

- Capacity: 80 g of medium to heavy molecular weight hydrocarbons
- Pressure: Up to 250 psig
- Efficiency: reduction of C4 hydrocarbons to less than 15 ppb
- 750 cubic centimeter gas purifiers
- Ideal for bulk purification applications or where several instruments are plumbed from a single gas source
- One-piece, heavy-walled aluminum tube design eliminates potential leaks
- Equipped with sintered stainless steel frits to prevent particulate contamination
- Refillable

#### Big Hydrocarbon Traps (BHT Series)

Description	Size (cc)	1/8 in. Part No.	1/4 in. Part No.
Big Hydrocarbon Trap	750	BHT-2	BHT-4
<b>Refills and Mounting Clips</b>			
Refill for Big Hydrocarbon Trap (enough for two refills)		BACR	BACR
Big Mounting Clip, 2/pk		UMC-5-2	UMC-5-2



Hydrocarbon S-trap

## Hydrocarbon Removal S-Traps

- Filled with 40/60 mesh activated charcoal
- Can be reconditioned

### Hydrocarbon Removal S-Traps

Description	Part No.
Hydrocarbon S-Trap, 1/8 in. fittings, used for trapping organics from gases*	5060-9096

\*This trap can be reconditioned by heating at a minimum of 350°C, with flow for 6 hours

## Capillary Grade Hydrocarbon Traps (HT3 Series)

- Extremely high surface area, coconut shell-based, activated carbon
- 100 cc of filtering media
- Purged with ultra-high purity helium
- Refillable

### Capillary Grade Hydrocarbon Traps (HT3 Series)

Description	Size (cc)	1/8 in. Part No.	1/4 in. Part No.
Capillary Grade Hydrocarbon Trap	100	HT3-2	HT3-4
<b>Refills and Mounting Clips</b>			
Adsorbent Refill (1 pint), 3 recharges for Capillary Grade Hydrocarbon Trap		ACR	ACR
Mounting clip for HT3 Series		MC-1	MC-1

**Ability of Activated Carbon to Remove Substances  
from Gases Using Hydrocarbon Traps**

<b>Compound</b>	<b>Efficiency</b>	<b>Compound</b>	<b>Efficiency</b>
acetone	excellent	dissolved oils	excellent
hypochlorous acid	excellent	nitrobenzenes	excellent
alcohol	excellent	nitrotoluene	excellent
amines	very good	ethyl acetate	excellent
inorganic acids	none	ethyl alcohol	excellent
ammonia	poor	organic acids	excellent
iodine	excellent	ethyl chloride	excellent
amyl acetate	excellent	oxalic acid	excellent
isopropyl acetate	excellent	ethyl ether	excellent
amyl alcohol	excellent	ozone	excellent
isopropyl alcohol	excellent	fluoride	poor
benzene	excellent	phenol	excellent
ketones	excellent	formaldehyde	poor
butyl acetate	excellent	potassium permanganate	excellent
butyl alcohol	excellent	propyl acetate	excellent
lactic acids	excellent	glycol	excellent
by-products-organic	very good	propyl alcohol	excellent
lysol	excellent	propyl chloride	excellent
calcium hypochlorite	excellent	hydrogen bromide	satisfactory
mercaptans	excellent	hydrogen chloride	poor
carbon dioxide	none	sodium hypochlorite	excellent
methyl acetate	excellent	hydrogen fluoride	none
chlorobenzene	excellent	solvents	excellent
methyl alcohol	excellent	hydrogen iodide	satisfactory
chlorine	excellent	sulfuric acid	satisfactory
methyl bromide	excellent	hydrogen selenide	satisfactory
chlorophenol	excellent	hydrogen sulfide	satisfactory
methyl chloride	excellent	toluene	excellent
chlorophyl	excellent	trichloroethylene	excellent
methyl ethyl ketone	excellent	xylene	excellent
cresol	excellent		

## Combination Traps

### Oxygen/Moisture Traps

Oxygen/moisture adsorbents team up to give you two functionalities in the same trap. Unlike some oxygen/moisture traps, these traps are disposable.

Consider the safety, performance, and cost advantages of Agilent capillary-grade oxygen/moisture traps (OT3) compared to heated, catalytic traps.

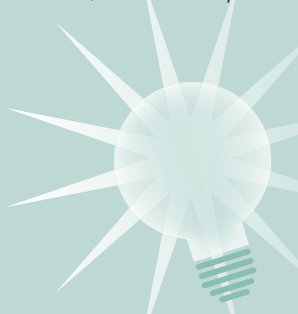
- Optimized for maximum surface area and capacity
- Leak-free, one-piece design (tested to 2000 psi)
- Bed material treated with ultra-high purity helium
- Filter design: prevents channeling, promotes efficient scrubbing

### Recommended Applications

- Electron Capture Detectors, oxygen/water removal effectively prevents detector degradation from contamination
- GC/MS

### How does it work?

The Agilent OT3 Trap contains a highly active, metal-containing, scrubbing material in an inert, aluminum body.



Agilent OT3 trap

### Using OT3 with your MSD can improve sensitivity and selectivity

M/Z Ratio*	18/28	32/28	32/40
Without Agilent OT3 Trap	0.098	0.266	11.08
With Agilent OT3 Trap	0.005	0.0118	0.247

\*Contribution of inherent instrument background removed. Analysis by California Analytica Laboratories, Inc. Sacramento, California

In addition to inert gases (nitrogen, helium, argon and krypton), the Agilent OT3 Trap treats streams of hydrogen, alkanes, alkenes, aliphatic hydrocarbon gases, low boiling aromatics, carbon dioxide, carbon monoxide, and argon-methane.

### Oxygen/Moisture Traps (OT3 Series)

Description	Capacity	Efficiency	Size (cc)	1/8 in.	1/4 in.
				Part No.	Part No.
OT3 Trap	500 mL O <sub>2</sub> 2 g H <sub>2</sub> O	< 15 ppb	100	OT3-2	OT3-4
<b>Trap Mounting Clips</b>					
Mounting clip				MC-1	MC-1



Hydrocarbon/Moisture trap

## Hydrocarbon/Moisture Traps

- Replace most mixed bed traps supplied by GC manufacturers
- Mounting panel
- Refillable

### Hydrocarbon/Moisture Traps (HMT Series)

Description	Size (cc)	1/8 in. Part No.	1/4 in. Part No.
Hydrocarbon/Moisture Trap	200	HMT200-2	HMT200-4
<b>Refills and Mounting Clips</b>			
Adsorbent Refill (1 pint), 2 recharges for Hydrocarbon/Moisture Trap		HCRMS	HCRMS
Mounting clip		MC-1	MC-1

### Combination Traps for Chemical Ionization MS

Description	Fitting (in.)	Part No.
Chemical Ionization for MS*	1/8	G1999-80410

\*Isobutane or methane applications only





Split vent trap and cartridges, RDT-1020

## Universal/External Split Vent Trap

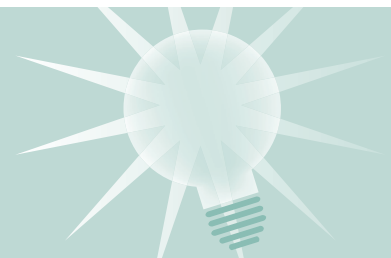
- Protects lab from contaminants released by split injection systems
- Stops environmental pollution by trapping and eliminating a broad range of contaminants
- Easy to change
- Comes with three packs of replacement cartridges

### Universal/External Split Vent Trap

Description	Part No.
Universal/external split vent trap with 3 cartridges, 1/8 in. Swagelok fitting	RDT-1020
Replacement cartridges, 3/pk	RDT-1023

#### Tips & Tools

Remember to replace split vent cartridge every six months.





Precision gas flow meter, 5067-0223

## Flow Meters

### Precision Gas Flow Meter

Agilent's Precision Gas Flow Meter is the ultimate gas flow meter for chromatography applications. This handheld flow meter is highly accurate, reliable and incorporates industry leading performance. The inherent stability of the rugged, solid state components allows Agilent to provide the longest calibration interval on the market, all traceable to NIST standards.

- Highly accurate and reliable measurement of common carrier and fuel gases used in GC, including nitrogen, air, carbon dioxide, hydrogen, helium, and argon/methane
- Two year guaranteed calibration period traceable to NIST standards
- Measures flow based on gas viscosity properties with an accuracy of  $\pm 0.8\%$  of reading + 0.2% of full scale
- Flow rate range from 5 to 500 mL/min
- Displays mass flow, volumetric flow, temperature, and pressure readings simultaneously
- Can be plumbed inline

#### Precision Gas Flow Meter

Description	Part No.
Precision gas flow meter	5067-0223



ADM flow meters



ADM 1000

## ADM Flow Meters

ADM flow meters allow most gas measurements with the touch of only one button – turn it on, and the instrument provides continuous, hands-free flow readings. Measure column, detector, and carrier gas flows without making any adjustments. ADM flow meters are ideal for measuring gas streams with a changing gas composition. For example, if gas flow is measured from a digestion system, concentration changes in methane, carbon dioxide, and oxygen will not affect accuracy.

All ADM flow meters are battery powered and field-portable. Agilent calibrates each instrument to 5-point, NIST-traceable standards to ensure the highest available accuracy. The ADM family measures flow volumetrically, so you don't have to make adjustments when changing from one gas to another.

### ADM 1000

- Accuracy  $\pm 3\%$
- Operating temperature range – 0 to 45°C for the instrument, -70 to 135°C for the tubing
- Calibration – traceable to NIST primary standards
- Real-time, split ratio measurement
- CE mark certified
- Measures flow rates from 0.5 to 1000 mL/min
- Split ratios – compare the ratio from one gas measurement to another (i.e., injection port split ratios)



ADM 2000

## ADM 2000

In addition to the features of the ADM 1000, the ADM 2000 includes:

- Mass flow measurements – measure flow rate, independent of atmospheric pressure and temperature (calculated)
- Data output through RS-232 port
- 9 V battery and AC power adapter (120 or 220 VAC)

### ADM Flow Meters

Description	Flow Rate (mL/min)		Gases Measured*	Accuracy (%)	Power Supply	RS-232 Data Output	Part No.
	Low	High					
ADM 1000**	0.5	1000	All	± 3	9 V Battery	None	220-1170
ADM 2000**	0.5	1000	All	± 3	Battery or 120 VAC	Yes	220-1171-U
ADM 2000E**	0.5	1000	All	± 3	AC Adapter, 220 V	Yes	220-1171-E
Carrying Case for ADM							907-0056

\*± 3% or ± 0.2 mL/min, whichever is greater with a flow rate of 0.5-1,000 mL/min

\*\*Non-corrosive gases only



Gas leak detector, G3388A

## Gas Leak Detector

Gas leaks can cause detector noise and baseline instability, shorten column life and waste expensive carrier gas. Liquid leak detectors, although inexpensive, can contaminate your system. Agilent's G3388A Electronic Gas Leak Detector is an easy way to quickly identify leaks in your system and prevent system downtime.

- Detects thermal conductivity differences
- Fast detection – 1 s
- Audible and visual alerts
- Minimum detection limit – 0.01 mL/min hydrogen and helium
- Lightweight – only 310 g
- Small – roughly 2.5 x 1.5 x 5.75 in.
- Rechargeable NiMH battery with over 5 hours of life
- Agilent sourced and approved power supply
- One year warranty from Agilent

### Gas Leak Detector

Description	Part No.
Handheld electronic gas leak detector	G3388A
Replacement filter tip	5067-0218
Replacement battery	5067-0219
Replacement power supply	5067-0220

### Tips & Tools

For more information about the Gas Leak Detector, visit [www.agilent.com/chem/leakdetector](http://www.agilent.com/chem/leakdetector)





Low Gas Alarm System, 2.0 and 2.5 in.

## Low Gas Alarm System

- Patented design audibly and visually alerts you when the regulator gauge reaches your specified level
- Ensures GC instrument uptime and improves lab productivity by protecting your system from gas outages and sludge contamination
- Designed for standard 50 mm/2 in. and 64 mm/2.5 in. regulator gauges
- Available in standalone (alarms at cylinder) or wireless models (alarms at cylinder AND up to 30 m away)

As cylinders run out of gas, sludge at the bottom can contaminate your GC system, ruin columns, and require extensive cleaning processes that take your instrument out of service. The Low Gas Alarm System will help you avoid these problems and keep your system up and running when you need it. A safe, reliable, and easy-to-use tool, the Low Gas Alarm System audibly and visually alerts you when a gas cylinder's pressure reaches a specified level. The system is completely non-invasive, and it indicates low pressure regardless of cylinder size, gas contained or regulator used.

### Standalone

- Safe, non-invasive design eliminates hazards such as high voltage and high pressure
- Uses a low voltage, low current battery
- Easy to install and maintain; attaches to existing regulator gauge

### Wireless

The wireless Low Gas Alarm System features all of the benefits of the standalone version plus:

- Uses wireless chip to communicate gas level to the Laboratory Network Controller (LNC)
- Features unique identifier so LNC can display individual status for each system
- Alerts you to alarm state with audible and visual indicators on LNC or pop-up software
- Allows you to monitor up to 12 cylinders from one location using a low-power short-range wireless technology



Laboratory network controller, G3387A



Low Gas Alarm System with LNC

## Low Gas Alarm System

Description	2.0 in.	2.5 in.
Standalone	G7311A	G3377A
Wireless*	G3374A	G3378A
Wireless with LNC*	G3376A	G3379A
Replacement battery, 3 V	5190-1453	5190-1453

\*Due to regulatory requirements, the wireless Low Gas Alarm System may not be available in all countries. Please contact your local Agilent sales office or Agilent Authorized Distributor for details.

## Laboratory Network Controller (LNC)

Description	Part No.
Laboratory network controller	G3387A
DC power supply for LNC, 7.5 V	5190-1454
LNC power supply option	5190-1578
Needed only if LNC is not being used with a PC	

### Tips & Tools

For additional information and to view a product demo, visit [www.agilent.com/chem/lowgas](http://www.agilent.com/chem/lowgas)





Brass body regulator

## Gas Cylinder Regulators, U.S. Only

To plumb your system properly, select one of Agilent's economical brass regulators and the proper gas purification devices from our newly expanded product offering. These regulators and our broad spectrum of in-line filters, combination traps, and gas purification systems are an excellent combination to plumb your systems. Our new gas purification selection guide and diagrams will help you determine which products can be used with the regulators below.

### Brass Body, Dual Stainless Steel Diaphragms

#### Specifications

<b>Max inlet pressure</b>	3000 psig
<b>Operating temperature range</b>	-40°F to 165°F
<b>Inlet-outlet port</b>	1/4 in., MNPT
<b>Outlet valve</b>	1/4 in., MNPT 2 1/2 in. dual scale gauges CGA-346, 350, 340, 580, 590 Internal self-reseating relief valve
<b>Delivery pressures</b>	1 to 125 psig
<b>Weight</b>	5.6 lb

#### Materials of Construction





**Brass Body, Dual Stainless Steel Diaphragms, 1/8 in., U.S. Only\***

Description	Part No.
CGA 346, 125 psig max (8.6 bar), Air	5183-4641
CGA 350, 125 psig max (8.6 bar), H <sub>2</sub> , Ar/Me	5183-4642
CGA 540, 125 psig max (8.6 bar), O <sub>2</sub>	5183-4643
CGA 580 Regulator, 125 psig max (8.6 bar), He, Ar, N <sub>2</sub>	5183-4644
CGA 590, 125 psig max (8.6 bar), Air	5183-4645

\*For 1/4 in. tubing, purchase a 1/4 in. adapter, U.S. only

**Connectors (Swagelok to Female NPT)**

Description	Unit	Part No.
1/8 in. (A) x 1/4 in. (B) connector, brass (included with brass regulators)	1/ea	0100-0118
1/4 in. (A) x 1/4 in. (B) connector, brass*	1/ea	0100-0119

\*Required for plumbing 1/4 in. tubing to regulators

**Tubing – Precleaned**

Description	Part No.
Copper tubing, 1/8 in., 50 ft	5180-4196
Copper tubing, 1/8 in., 12 ft	5021-7107
Teflon tape, industrial roll	0460-1266



Cylinder wall bracket, 5183-1941

**Cylinder Wall Bracket**

Description	Part No.
Cylinder wall bracket with strap & chain (cylinder size up to 14 in., 35 cm)	5183-1941

## GC Installation Kits

Agilent Installation Kits for GC are designed to provide you with the essential items necessary for a successful installation while providing a substantial cost savings over individual purchases.

### GC Installation Kit with Gas Purifiers (no tools)

Description	Unit	Part No.
GC Installation Kit with Renewable Gas Purifiers		19199C
Renewable gas purifier system startup kit		G3440-60004
Snoop, 8 oz (236 mL) bottle		9300-0311
1/8 in. brass nut and ferrule set	20/pk	5080-8750
Copper tubing, 1/8 in., 50 ft		5180-4196
1/8 in. tee, brass	2/pk	5180-4160
1/8 in. cap, brass	6/pk	5180-4121
Universal/external split vent trap with 3 cartridges		RDT-1020
Precision tubing cutter		5190-1442

### GC Installation Kit with Tools (no gas purifiers)

Description	Unit	Part No.
GC Installation Kit with Tools (no gas purifiers)		19199M
Snoop, 8 oz (236 mL) bottle		9300-0311
1/8 in. brass nut and ferrule set	20/pk	5080-8750
Copper tubing, 1/8 in., 50 ft, precleaned		5180-4196
1/8 in. tee, brass	2/pk	5180-4160
Tubing cutter, 1/8 to 5/8 in. OD tubing		8710-1709
1/8 in. cap, brass	6/pk	5180-4121
Nut driver, 7 mm		8710-1217
Screwdriver, Torx T10		5182-3466
Screwdriver, Torx T20		5182-3465
Open end wrench, 1/4 and 5/16 in.		8710-0510
Open end wrench, 7/16 and 9/16 in.		8710-0803
Open end wrench, 7/16 and 3/8 in.		8710-0972
Wrench, 1/2 and 7/16 in.		8710-0806

### GC Basic Installation Kit

Description	Part No.
GC Basic Installation Kit	5182-3453
Includes copper tubing, column nuts, two moisture traps, and five wrenches	



Brass nut and ferrule set, 5080-8750

## Fittings

### Nuts, Front and Back Ferrule Sets

Description	Unit	Part No.
1/16 in. stainless steel nut and ferrule set	10/pk	5180-4149
1/8 in. brass nut and ferrule set	20/pk	5080-8750
1/8 in. stainless steel nut and ferrule set	20/pk	5080-8751
1/4 in. brass nut and ferrule set	20/pk	5080-8752
1/4 in. stainless steel nut and ferrule set	20/pk	5080-8753

### Nuts

Description	Unit	Part No.
1/16 in. nut, stainless steel	10/pk	5180-4102
1/8 in. nut, brass	10/pk	5180-4103
1/4 in. nut, brass	10/pk	5180-4105



Stainless steel front ferrules, 5180-4108

### Front Ferrules

Description	Unit	Part No.
1/16 in. stainless steel front ferrule	10/pk	5180-4108
1/16 in. front ferrule, stainless steel, Valco one piece	10/pk	5181-1292
1/8 in. front ferrule, brass	10/pk	5180-4109
1/4 in. front ferrule, brass	10/pk	5180-4111

### Back Ferrules

Description	Unit	Part No.
1/16 in. stainless steel back ferrule	10/pk	5180-4114
1/8 in. back ferrule, brass	10/pk	5180-4115
1/4 in. back ferrule, brass	10/pk	5180-4117

### Caps

Description	Unit	Part No.
1/8 in. cap, brass	6/pk	5180-4121
1/4 in. cap, brass	6/pk	5180-4120



Stainless steel blanking nut, 01080-83202



Brass adapter, 0100-0420



Stainless steel tee, 0100-0542



Brass cross, 0100-0161



Stainless steel union, 0100-0124



Brass union, 0100-1316

## Plugs

Description	Unit	Part No.
1/8 in. plug, brass	6/pk	5180-4124
1/4 in. plug, brass	6/pk	5180-4125

## Blanking Nut, Adapter, Hose Connector

Description	Unit	Part No.
1/16 in. stainless steel blanking nut		01080-83202
1/8 in. x 1/8 in. adapter, brass	1/ea	0100-0420
1/16 in. hose connector, brass	10/pk	5180-4148

## Tees

Description	Unit	Part No.
1/16 in. tee, stainless steel	1/ea	0100-0782
1/8 in. tee, brass	2/pk	5180-4160
Stainless steel tee for O <sub>2</sub> gas mix, 1/8 in.	1/ea	0100-0542
1/4 in. tee, brass	2/pk	5180-4129
1/6 in. tee, low dead volume, stainless steel	1/ea	0100-0969

## Crosses

Description	Unit	Part No.
1/8 in. cross, brass	1/ea	0100-0161
1/4 in. cross, brass	1/ea	0100-0985

## Elbows

Description	Unit	Part No.
1/8 in. elbow, brass	1/ea	0100-0091

## Unions

Description	Unit	Part No.
1/16 in. union, stainless steel	1/ea	0100-0124
1/16 in. union, brass	1/ea	0100-1316
1/8 in. union, brass	2/pk	5180-4127
1/8 in. union, stainless steel	1/ea	0100-0126
1/4 in. union, brass	2/pk	5180-4128
1/4 in. union, stainless steel	1/ea	0100-0128

**Zero Dead Volume Unions**

Description	Unit	Part No.
1/16 in. union, zero dead volume, stainless steel	1/ea	0100-0900

**Bulkhead Unions**

Description	Unit	Part No.
1/8 in. bulkhead union, stainless steel	1/ea	0100-0132
1/8 in. bulkhead union, brass	1/ea	0100-0133



Connector (Swagelok-style to male NPT),  
5180-4143

**Connectors (Swagelok to Male NPT)**

Description	Unit	Part No.
1/8 in. (A) x 1/4 in. (B) connector, brass	2/pk	5180-4143
1/4 in. (A) x 1/4 in. (B) connector, brass	2/pk	5180-4145

**Connectors (Swagelok to Female NPT)**

Description	Unit	Part No.
1/8 in. (A) x 1/4 in. (B) connector, brass	1/ea	0100-0118
1/4 in. (A) x 1/4 in. (B) connector, brass*	1/ea	0100-0119

\*Required for plumbing 1/4 in. tubing to regulators



Connector (Swagelok-style to female NPT),  
0100-0118



Reducing union, 0100-0241



Reducing union, 0100-0121

## Reducing Unions

Description	Unit	Part No.
1/16 x 1/8 in. reducing union, brass	2/pk	5180-4130
1/16 x 1/8 in. reducing union, stainless steel	1/ea	0100-0241
1/8 x 1/4 in. reducing union, brass	2/pk	5180-4131
1/8 x 1/4 in. reducing union, stainless steel	1/ea	0100-0121

## Reducers

Description	Unit	Part No.
1/8 in. (A) x 1/4 in. (B) reducer, brass	2/pk	5180-4135
1/4 in. (A) x 1/8 in. (B) reducer, brass	2/pk	5180-4134

## Fittings Kit

Description	Unit	Part No.
Fittings Kit: Includes items below		5180-4161
1/8 in. nut, brass	10/pk	5180-4103
1/4 in. nut, brass	10/pk	5180-4105
1/8 in. front ferrule, brass	10/pk	5180-4109
1/4 in. front ferrule, brass	10/pk	5180-4111
1/8 in. back ferrule, brass	10/pk	5180-4115
1/4 in. back ferrule, brass	10/pk	5180-4117
1/4 in. cap, brass	6/pk	5180-4120
1/8 in. cap, brass	6/pk	5180-4121
1/8 in. plug, brass	6/pk	5180-4124
1/4 in. plug, brass	6/pk	5180-4125
1/8 in. union, brass	2/pk	5180-4127
1/4 in. union, brass	2/pk	5180-4128
1/8 in. tee, brass	2/pk	5180-4160
1/4 in. tee, brass	2/pk	5180-4129
1/8 x 1/4 in. reducing union, brass	2/pk	5180-4131
1/4 in. (A) x 1/8 in. (B) reducer, brass	2/pk	5180-4134
1/8 in. (A) x 1/4 in. (B) reducer, brass	2/pk	5180-4135



General laboratory tool kit, 5180-4162

## Tools

### General Laboratory Tool Kit

The general laboratory tool kit is made in the USA and includes the following items:

- Toolbox
- Flashlight
- 8 in. bastard file
- 6 in. adjustable wrench
- 12 in. adjustable wrench for use with regulator
- No. 1 pt, 3 in. Pozidriv shaft, fits no. 2-4 screws
- No. 2 pt, 4 in. Pozidriv shaft, fits no. 5-10 screws
- Flathead screwdriver, 2 in. steel shaft, 1/8 in. blade
- Flathead screwdriver, 4 in. steel shaft, 1/4 in. blade
- Hex key set, 1.5, 2, 2.5, 3, 4, 5, and 6 mm keys
- 6 in. long jaw needle nose pliers with side cutters
- Three open-end wrenches (1/4 x 5/16 in., 1/2 x 9/16 in., 7/16 x 3/8 in.)
- Snoop-liquid leak detector
- PTFE tape

Description	Part No.
General laboratory tool kit	5180-4162

#### LC Tool Kits

Description	Part No.
HPLC system tool kit	G4203-68708
Compact tool kit	G4296-68715

#### Wrenches

Description	Part No.
Open end wrench, 1/4 and 5/16 in.	8710-0510
Wrench, 1/2 and 7/16 in.	8710-0806
Open end wrench, 7/16 and 9/16 in.	8710-0803
Open end wrench, 7/16 and 3/8 in.	8710-0972
Adjustable wrench, 12 in., for use with regulators	8710-1712
Open end wrench, 9/16 and 5/8 in.	8720-0010
Open end wrench, 1/2 and 9/16 in.	8720-0025
Open end wrench, 14 mm	8710-1924
Open end wrench, 12 mm, 116 mm long	8710-1841
Open end wrench, 4 mm	8710-1534

### Screwdrivers

Description	Part No.
Screwdriver, 3 in. Pozidriv shaft No. 1 pt	8710-0899
Screwdriver, 4 in. Pozidriv shaft No. 2 pt	8710-0900
Screwdriver, Torx T10	5182-3466
Screwdriver, Torx T20	5182-3465

### Pliers and Tweezers

Description	Part No.
Needle nose pliers, pointed serrated jaws	8710-0004
Tweezers, 4-3/4 in. long	8710-0007
Truarc pliers	8710-0018

### Tube Cutters and Replacement Blades

Description	Unit	Part No.
Precision tubing cutter for 1/16 in. stainless steel tubing		5190-1442
Hi-duty tubing cutter, 1/8 to 1-1/8 in. OD tubing		8710-1707
Hi-duty tubing cutter blades	5/pk	8710-1708
Tubing cutter, 1/8 to 5/8 in. OD tubing		8710-1709
Plastic tubing cutter		8710-1930
Blades for plastic tubing cutter	5/pk	8710-1931

### Hex Keys

Description	Part No.
Hex key set: 1.5, 2, 2.5, 3, 4, and 5 mm keys, 1090A (5880/90A)	8710-0641
Hex key, 4 mm, 15 cm long, T-handle	8710-2392
Hex key, 3 mm, 12 cm long, straight handle	8710-2411
Hex key, 2.5 mm, 15 cm long, straight handle	8710-2412
Hex key, 1.5 mm, 10 cm long, straight handle	8710-2393
Hex key, 9/64 in., 15 cm long, T-handle	8710-2394
Hex key, 4.0 mm, 10 cm long, straight handle	5965-0027
Hex key, 2.5 mm, 10 cm long, straight handle	5965-0028
Tool kit hex keys, Rheotool*	5064-8211
Includes 3 hex keys, 4 mm, 1.5 mm, and 9/64 in., with straight or T-handle plus Rheotool	

\*These tools are recommended for easier repair and maintenance of LC modules.



Hex Keys, 5064-8211



## GC Column Accessories

### Capillary Column Installation Kit

The Capillary Column Installation Kit contains:

- Diamond-tipped pencil
- 20x magnifier
- Ferrule removal tool
- Septum removal tool
- Refillable 2 oz. bottle of Snoop



Column installation kit, 430-2000

Description	Part No.
Capillary Column Installation Kit with diamond-tipped cutting pencil	430-2000

### Capillary Column Rinse Kit

This kit makes solvent rinsing easy! Solvent rinsing removes many contaminants that accumulate in columns. The contaminants are removed by passing solvents through the column. Only bonded and cross-linked phase columns should be rinsed, or permanent damage to the column will result.



Column rinse kit, 430-3000

Description	Part No.
Capillary Column Rinse Kit	430-3000



Fused silica tubing cutters

## Fused Silica Tubing Cutters

We offer a conveniently designed, pencil-shaped tool and a ceramic wafer that allow you to make clean and easy cuts in fused silica, glass and aluminum-clad capillary columns.

Description	Part No.
Diamond-tipped column cutting pencil	420-1000
Ceramic wafer column cutter, 4/pk	5181-8836
Column cutter with rotating diamond blade	5183-4620
Replacement diamond blade (for 5183-4620)	5183-4621



Column cutting tool, 5183-4620

## Column Baskets and Hangers

Description	Part No.
13 cm, 5 in. basket for 6850 capillary columns	19091-80060
Column hanger for 5 in. basket	G2630-80800
Column hanger clip kit for 7 in. basket	G1530-61580
Column hanger for 6890, 5890, 5880A	1460-1914



GC Buddy Junior, 5183-4789



Capillary and Megabore ferrule tools



Column ferrule installation tool, 19251-80680



Magnifier, mirror, microprobes

## Miscellaneous Tools

### Combination GC Tools

Description	Part No.
GC Buddy multi-purpose lab tool	5182-9765
GC Buddy Junior multi-purpose lab tool	5183-4789

### Ferrule Tools

Remove ferrules stuck inside fittings. Screw the stainless steel ferrule tool into the ferrule and pull it out. Use the smaller capillary ferrule tool for capillary column ferrules (0.32 mm ID column and smaller). The megabore ferrule tool is used for megabore ferrules. The liner tool can be used to remove polyimide and tubing from inside a megabore liner. The column ferrule installation tool positions a ferrule onto a capillary column for proper installation.

Description	Part No.
Capillary ferrule tool	RFT-2500
Megabore ferrule tool	RFT-5300
Column ferrule installation tool	19251-80680
MS interface column installation tool	G1099-20030

### 20x Magnifier

Examine column ends for proper cuts. Jagged, rough, or non-perpendicular cuts negatively affect chromatographic performance.

Description	Part No.
20x Magnifier	430-1020

### Microprobes

Hardened stainless steel probes remove septum and ferrule pieces stuck in fittings. Five different styles give you all of the angles necessary for getting into those hard-to-reach places.

Description	Part No.
Microprobes	RMP-5005

## Mirror

Inspect injection ports, the inside of fittings, and other hard-to-reach places.

Description	Part No.
Mirror	707-0027



Snoop

## Snoop

Leak test most pressurized gas systems. We recommend that leak detecting solutions be used with care where there is any possibility of the fluid being aspirated into gas flow streams supplying the column or detector. This squeezable bottle comes with a “Snooper Tube” extendable up to 12 in. (30 cm). Electronic leak detectors are preferred. In their absence, a volatile nonreactive solvent like isopropanol may be used. Use caution to avoid aspiration of materials such as Snoop into the column.

Description	Part No.
Snoop, 8 oz (236 mL) bottle	9300-0311
Snoop, 1 gallon bottle	460-1002

## Injection Port Cleaning Kit

If changing the liner and trimming the column does not remove contamination from your injection port, you probably need to clean and flush your injection port. Three stainless steel brushes and a scraper are the ideal tools for removing sample residue and septum particles. The stainless steel brushes have diameters of 5 mm, 1/4 in. and 3/8 in.



Injection port cleaning kit, 480-0003

Description	Part No.
Injection Port Cleaning Kit	480-0003

## Miscellaneous Injection Port Tools

Description	Part No.
Septum tool, knurled handle	450-1000
Ferrule removal tool	440-1000
Capillary inlet cleaning wires, 5/pk	5180-4153
Cotton swabs, 100/pk	5080-5400



Septum tool with knurled handle, 450-1000



Capillary inlet cleaning wires, 5180-4153



FID cleaning kit, 9301-0985

### FID Cleaning Kit

This easy-to-use maintenance kit improves sensitivity, reduces noise, and decreases detector spiking.

Description	Part No.
FID cleaning kit	9301-0985

### 12-Piece File Set

This 12-piece file set scores glass, removes burrs from metal tubing, and cleans threads. The files are 5-1/2 in. long.

Description	Part No.
12-Piece File Set	RSF-1200

## Chemical Standards

When performing chemical analyses, you can't afford to settle for anything less than the highest standards. That is why Agilent standards are the perfect solution for you. Every Agilent standard must meet the uncompromising parameters of our ISO-9001 registered quality system. Our quality system means the strictest quality control of incoming raw materials and the meticulous validation of analyte concentrations, homogeneity and stability.

You can find chemical standards throughout this catalog. Use the reference chart below to find the chemical standards to best fit your needs.

### Chemical Standards

Type	Page No.
GC Qualitative Standards	317
GC/MS Analyzer Kit Standards	335
GC/MS Test and Performance Samples	335
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Agilent J&W GC Column Test Standards	531
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Polymer Standards for GPC/SEC	981
CE Standards & Reagents	1156
AA and ICP-OES Standards	1220
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UV-Vis Standards & Reagents	1236



## Integrators, Integrator Supplies and Cables

Information generation and presentation have never been more important. Agilent understands that data handling supplies are essential. We provide a convenient way to purchase ink cartridges and integrator supplies at the same time as other laboratory supplies so you never run out a crucial moment.



Ink cartridge, 5181-1220

### Integrator Cartridges and Printheads

Description	Part No.
Ink cartridge, Agilent 3397A, 3396 Series III, 3396A and B, 3395, 3394	5181-1220
Printhead for 3388A and 5880A	19350-60540

## Integrator Paper and Supplies

**Paper and Supplies for Agilent 3397A, 3396 Series II, and 3396A/B/95/94**

<b>Description</b>	<b>Unit</b>	<b>Part No.</b>
Z-fold paper, sequentially numbered, 8.5 x 11 in., 500 sheets/pk, Inkjet	5/pk	5062-3561
Perforated paper, 8.5 x 11 in. rolls, Inkjet	4/pk	5181-1219
Perforated paper, sequentially numbered, 8.5 x 11 in. rolls, Inkjet	4/pk	5183-2009
Perforated paper, A4 size rolls, Inkjet	4/pk	5181-1255
Replacement paper roll rod		03394-20500
Replacement paper roll brackets	2/pk	03396-40050

**Thermal Paper for Agilent 3390/92/93**

<b>Description</b>	<b>Unit</b>	<b>Part No.</b>
Thermal printing paper, blue print, 4.209 in. (106.9806 mm) wide x 400 ft	4 rolls/pk	5080-8800

**Thermal Paper for Agilent 338X/5830/3370**

<b>Description</b>	<b>Unit</b>	<b>Part No.</b>
Z-fold paper, black print, 8.5 in. wide	8 pk/box	9270-0658



## Integrators and Accessories

**3396 Series III Integrator with BASIC programming**

- BASIC programming
- Reintegration/replot
- Negative peak integration
- Industry standard RS-232 communications port
- Offers 256 kb RAM
- Multiple-level calibration
- Instrument Control (INET)

<b>Description</b>	<b>Part No.</b>
3396 Series III Integrator with BASIC programming	3396C
GC Dual-channel Appak-Series III, 5890 and 6890 GC control software for the 3396 Series III Integrator*	G2101A
Integrator Starter Kit Includes 8.0 MB data storage card, Z-fold paper stand, Z-fold paper (500 sheets), and three ink cartridges	G2100A
Integrator Data Storage card, 16 MB	G2105A

\*Requires Agilent 5890 GC communications board, option 552 or accessory 19242B

## Cables

**3396 Series III Cable Sets**

Description	Part No.
Series III Integrator General Purpose cables, signal/remote cable pair includes 35900-60630 and 03396-61031	G2108A
INET interface for integrators, provides INET communications and dual-channel output, includes 1 INET cable	G1553A

**Cables to Connect 3397A or 3396/95 Series III Integrator**

Instrument	Cable Type		
	Analog	Remote	Sample
6890 Series GC (non-INET)	G1530-60570	03396-61010	
5890 GC (non-INET)	35900-60610		
1100/1200 Series LC	35900-60750	03396-61010	03396-60560
General Purpose	35900-60630	03394-60540	

**Cables to Connect 3394/95A and 3396A/B Integrator**

Instrument	Cable Type	
	Analog	Remote
6890 Series GC	G1530-60570	
	03396-61020	03396-61010
5890 GC	35900-60610	
General Purpose	35900-60630	
	35900-60900	35900-60920

**HPIB and GPIB Cables**

<b>Description</b>	<b>Part No.</b>
PCI GPIB Card for Win95/98/NT (82350A/B)	G1680-63715
HPIB Cable 2 m (10833B)	10833B-2310
General Purpose Cable GPIO, open end	G1103-61611
HPIB Cable, 8 m (10833G)	10833G-2310
Cable, 6890 to PC 9F/9F RS232	G1530-60600
Crossover Ethertwist Cable, 10 ft	5183-4649
Adapter, extends GPIB connector (10834A)	10834A-2310

**Instrument Interface Cables**

<b>Description</b>	<b>Part No.</b>
Signal cable, general purpose analog output cable assembly, spade lugs/6 pins	G1530-60560
External event control, cable, 8 pins/spade lugs	G1530-60590
Remote start cable for general use with lug	35900-60670
6890 to PC via RS 232-C, 9 female/25 male user card cable	G1530-60610
General purpose binary-coded decimals cable with spade lugs	G1530-60630
Automatic liquid sampler; remote start/stop cable, 2 m 9 male/9 female	G1530-60930
HPIL cable, 5 m	82167-60003
Remote Y Cable, G1512/5890A to 3396C	G1512-60530
Remote Cable to 5890	35900-60700



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