



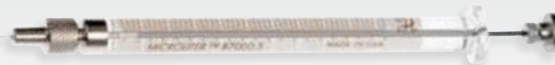
Manual GC Syringes

Hamilton provides a variety of syringes that are designed for use with manual GC injection ports. Our syringes are handmade with an unmatched attention to detail. The manufacturing process and quality assurance procedures ensure that every syringe we sell will provide superior

accuracy and precision as well as cycle life. The non-coring, point style 2 needles are ideal for penetrating septa while maximizing the life of the seal. Choose the sub category that is associated with your injection method to find the appropriate syringe for your application.

Standard Injection

0.5 μ L to 500 μ L



P. 40

Purge and Trap Syringes

5 mL and 25 mL



P. 42

SampleLock Syringes

50 μ L to 100 μ L



P. 42

On-Column Injection Syringes

0.5 μ L and 10 μ L



P. 43

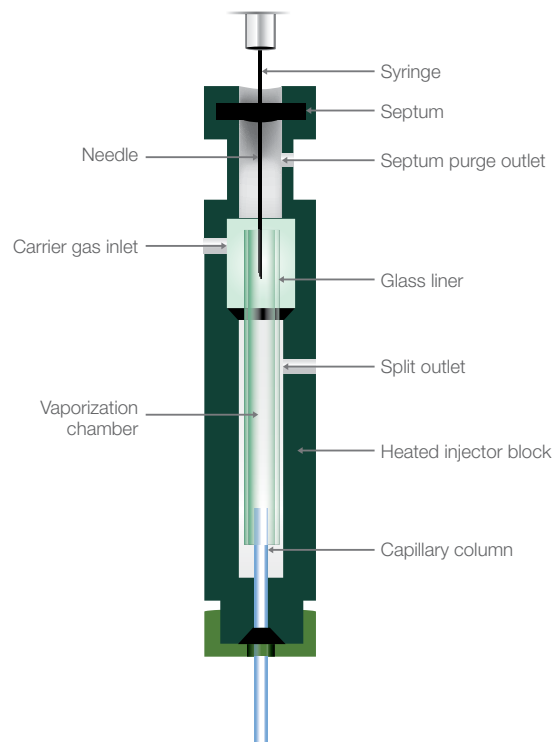
Standard Injection

A split/splitless injector consists of a heated chamber with a glass liner into which the sample is injected through the septum. A microsyringe is used to inject the sample through a rubber septum into a flash vaporizer chamber at the head of the column. The sample vaporizes to form a mixture of carrier gas, vaporized solvent, and vaporized analytes. In the split mode, only a proportion of this mixture reaches the column, while most sample exits through the split outlet. This avoids overloading the column. In the splitless mode, the split vent is closed so that the vaporized analyte passes onto the column. This mode is more sensitive and adequate for trace analysis.

Common syringe features for split/splitless injection include:

- Microliter syringes for liquid samples and Gastight syringes for gas and liquid samples
- Common volume range from 0.5 μL to 50 μL
- Needle with point style 2 to pierce the rubber septum
- Needle length of 51 mm to reach the middle of the glass liner. Splitless injection of small volumes may be performed with a 70 mm needle to deliver the sample close to the column entrance.

Syringes Figure 2. Illustration of a split/splitless injector



Standard Injection (Cont.)

Knurled Hub (KH)



P/N	Volume	Series	Gauge
86259	0.5 µL	7000	25 ga
86211	1 µL	7000	22 ga
80135	1 µL	7000	25 ga
88511	2 µL	7000	23 ga
88411	2 µL	7000	25 ga
88011	5 µL	7000	24 ga

Note: The needle length for these syringes is 70 mm.

Cemented Needle (N)



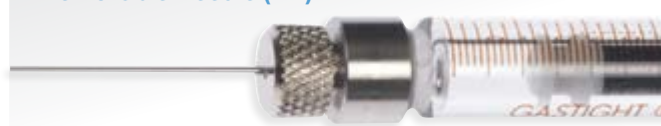
P/N	Volume	Series	Gauge
87900	5 µL	700	26s ga
84850	5 µL	800	26s ga
80300	10 µL	700	26s ga
80366	10 µL – 6 pk	700	26s ga
84852	10 µL	800	26s ga
80000	10 µL	1700	26s ga
84875	10 µL	1800	26s ga
80400	25 µL	700	22s ga
84854	25 µL	800	22s ga
80200	25 µL	1700	22s ga
84878	25 µL	1800	22s ga
80500	50 µL	700	22s ga
84856	50 µL	800	22s ga
80900	50 µL	1700	22s ga
84881	50 µL	1800	22s ga
80600	100 µL	700	22s ga
84858	100 µL	800	22s ga
81000	100 µL	1700	22s ga
84884	100 µL	1800	22s ga
80700	250 µL	700	22s ga
84887	250 µL	1800	22s ga
80800	500 µL	700	22 ga

Luer Tip Cemented Needle (LTN)



P/N	Volume	Series	Gauge
81100	250 µL	1700	22s ga
81217	500 µL	1700	22 ga

Removable Needle (RN)



P/N	Volume	Series	Gauge
87930	5 µL	700	26s ga
84851	5 µL	800	26s ga
80330	10 µL	700	26s ga
80336	10 µL – 6 pk	700	26s ga
84853	10 µL	800	26s ga
80030	10 µL	1700	26s ga
84877	10 µL	1800	26s ga
80430	25 µL	700	22s ga
84855	25 µL	800	22s ga
80230	25 µL	1700	22s ga
84880	25 µL	1800	22s ga
80530	50 µL	700	22s ga
84857	50 µL	800	22s ga
80930	50 µL	1700	22s ga
84883	50 µL	1800	22s ga
80630	100 µL	700	22s ga
84859	100 µL	800	22s ga
81030	100 µL	1700	22s ga
84886	100 µL	1800	22s ga
80730	250 µL	700	22s ga
84861	250 µL	800	22s ga
81130	250 µL	1700	22s ga
84889	250 µL	1800	22s ga
80830	500 µL	700	22 ga
81230	500 µL	1700	22 ga

Purge and Trap Syringes

These syringes are ideal for purge and trap applications because the plunger can be easily removed to load water samples into the syringe barrel. Internal standard or a surrogate spike can be added through the twist valve with a 10 μ L syringe. The sample syringe can also be connected directly to the purge and trap valve via the integral male luer fitting.

Hamilton 5 mL and 25 mL Purge and Trap syringes were designed for the analysis of drinking water samples according to EPA purge and trap concentration techniques (see EPA methods 502.1, 502.2, 503.1, 524.1, and 524.2).

Special Termination

P/N	Volume
81570	5 mL
82570	25 mL

Note: These syringes work with valve part number 86789.



SampleLock Syringes

The Hamilton SampleLock syringes allow the collection, storage, transportation, and analysis of liquid or gaseous samples without the danger of evaporative loss or environmental contamination. Syringes are available in sizes ranging from 50 μ L to 100 mL. An easy-to-use twist valve and a positive rear stop on SampleLock prevents loss of sample and plunger blowout. Optional male luer and female luer lock adapter threads on the SampleLock valve making the syringes compatible with a multitude of connectors and fittings. These adapters may be found on page 73. The needles in this section are 51 mm in length and are point style 2.

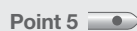
SampleLock (SL)



P/N	Volume	Gauge
80956	50 μ L	22s ga
81056	100 μ L	22s ga
81156	250 μ L	22s ga
81256	500 μ L	22 ga
81356	1 mL	22 ga
81456	2.5 mL	22 ga
81556	5 mL	22 ga
81656	10 mL	22 ga
86326	25 mL	22 ga
86336	50 mL	22 ga
86346	100 mL	22 ga



Point Styles

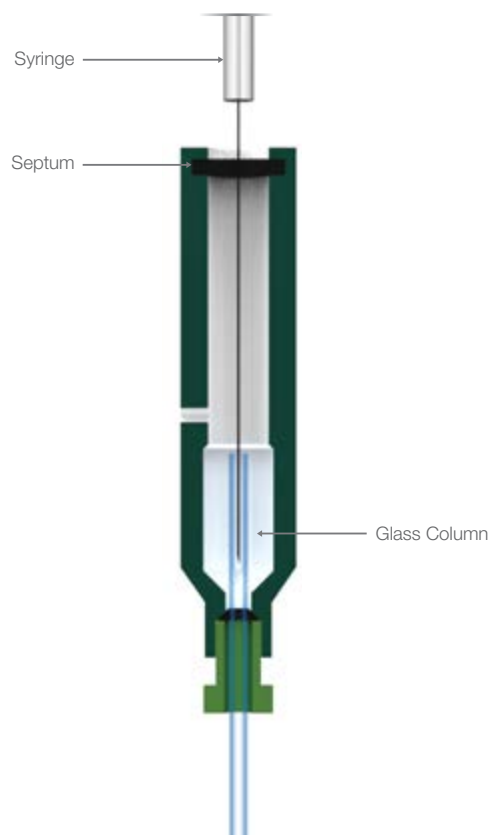


On-Column Injection Syringes

On-column injection employs the direct introduction of the liquid sample into the column. This is very useful for the analysis of thermally unstable samples and avoids boiling point discrimination. On-column injection uses point style 3 syringes with the following features:

- Small outer diameter needles adjusted to the inner diameter of the column (0.17 mm needle for columns with 0.25 mm inner diameter, 32 gauge for columns with 0.32 mm inner diameter, and 26 gauge for columns with a 0.53 mm inner diameter)
- Longer needles tailored to pass through the injector and reach within the capillary column
- Point style 3 adapted to the typical septum of the on-column injector

Syringes Figure 3. Illustration of an On-Column Injector



Knurled Hub (KH)

P/N	Volume	Series	Gauge	Length
86257	0.5 µL	7000	32 ga	100 mm

Cemented Needle (N)

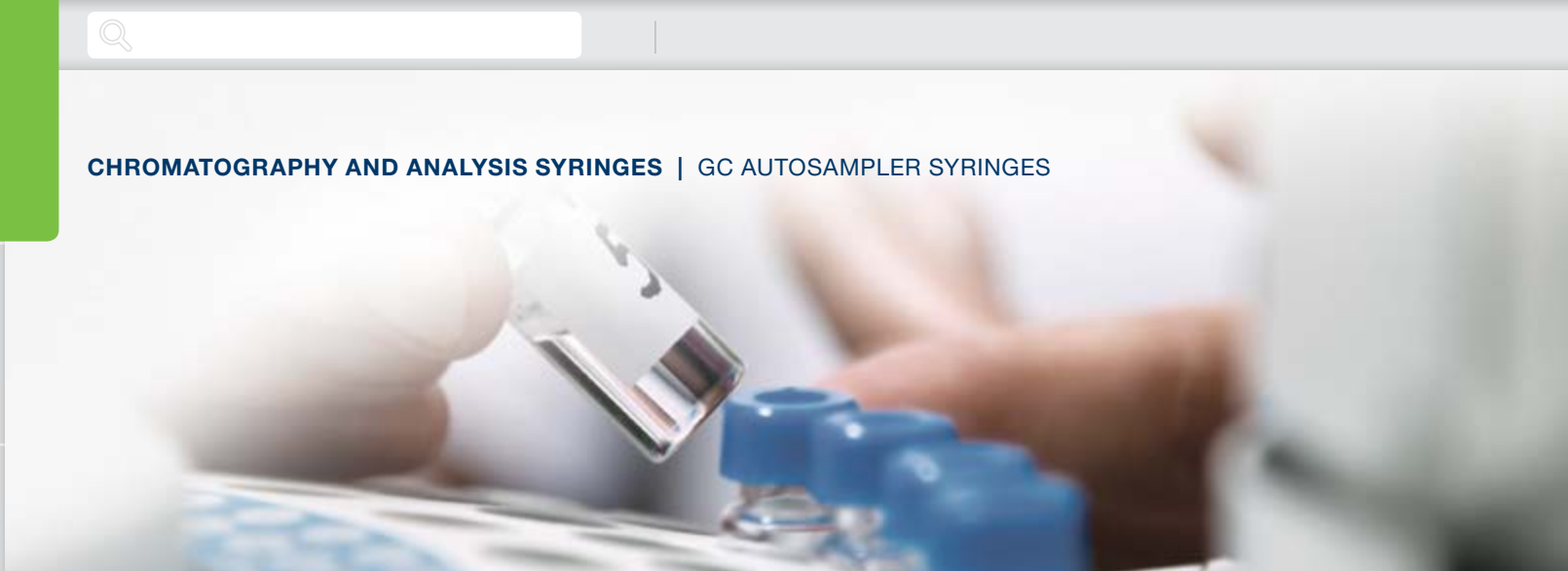
P/N	Volume	Series	Gauge	Length
80351	10 µL	700	32 ga	75 mm

Removable Needle (RN)

P/N	Volume	Series	Gauge	Length
80331	10 µL	700	0.17 mm	115 mm
80386*	10 µL	700	32 ga	125 mm
87402	10 µL	700	0.17 mm	100 mm
87404	10 µL	1700	0.17 mm	100 mm
87405	10 µL	1800	0.17 mm	100 mm

**This is a point style 2 needle.*





GC Autosampler Syringes

Autosamplers enable the automatic introduction of samples into the injector of the gas chromatograph (GC). Automatic injection has become very common as it improves reproducibility and speed.

Hamilton offers a wide range of autosampler syringes. The features of the autosampler syringes are adapted for an exact fit to a specific

autosampler. The point style AS (for autosampler) has been specifically designed to withstand repeated penetration through the GC septa. Syringes for headspace injection usually have a point style 5, which is ideal for large gas volume injection.

Manufacturer	Model	For Syringes, See Model:	Page
Agilent	7670, 7671, 7672 ALS 7673, 7683, 6850 ALS 7693A ALS		P. 45 P. 46 P. 48
Bruker Varian	8100, 8200 CP-8400/8410, CP-9010/9050 CP-9020/9025		P. 49 P. 49 P. 49
CTC / LEAP	CombiPAL (Headspace) CTC/LEAP PAL GC		P. 51 P. 50
Gerstel		CTC/LEAP PAL GC	P. 50
Perkin Elmer	AutoSystem Clarus 500 GC		P. 52 P. 52
Shimadzu	AOC-9 AOC-14, AOC-17, AOC-20 AOC-5000	CTC / LEAP CombiPAL (Headspace)	P. 52 P. 52 P. 51
Thermo Finnigan	AI/AS 3000 TriPlus AS 800/2000 HS 250/500/850 TriPlus	CTC/LEAP PAL GC	P. 53 P. 53 P. 53 P. 50



Agilent Syringes

7670, 7671, 7672 ALS

Hamilton maintains a large variety of replacement syringes for the most popular gas chromatography (GC) autosamplers, including the Agilent Automatic Liquid Sampler (ALS) instrument.

Hamilton has designed a series of syringes specifically for Agilent ALS autosamplers that meets the instruments' requirements for dimensional accuracy, needle length, needle gauge, needle tip, and overall lifetime. Every Agilent syringe produced by Hamilton undergoes quality control procedures that ensure they meet the strictest standards for accuracy, precision, and product life cycle.

Cemented Needle (N)



P/N	Volume	Gauge	Length	Point
87900	5 µL	26s ga	51 mm	2
80300	10 µL	26s ga	51 mm	2
80366	10 µL – 6 pk	26s ga	51 mm	2
80000*	10 µL	26s ga	51 mm	2

*This is a Gastight syringe.

Removable Needle (RN)



P/N	Volume	Gauge	Length	Point
80338	10 µL	26s ga	51 mm	2
80011*	10 µL	26s ga	51 mm	2

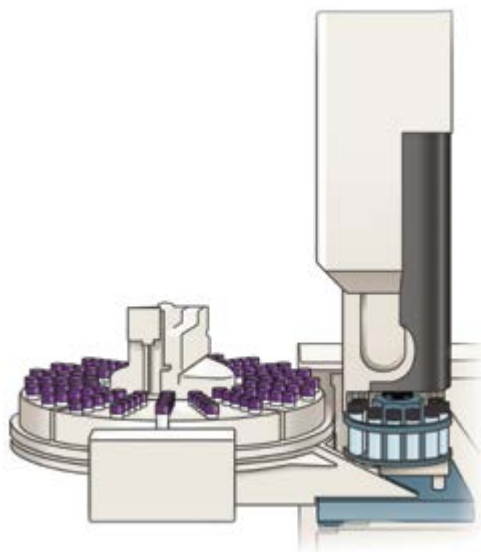
*This is a Gastight syringe.



Agilent Syringes

7673, 7683, 6850 ALS

The Agilent 7683 series automatic liquid sampler raises the standard for gas chromatography (GC) system performance and reliability. This is the automatic sampler to have for accuracy and ease of use, superior reproducibility with minimal rework, easy accommodation to changing needs, optimum injection flexibility, and enduring reliability.



Special Termination



P/N	Volume	Gauge	Length	Point
86274	0.5 µL	26 ga	43 mm	AS
86276	0.5 µL	23 ga	43 mm	AS
80175	1 µL	26 ga	43 mm	AS
80176	1 µL	23 ga	43 mm	AS

Cemented Needle (N)



P/N	Volume	Gauge	Length	Point
87992	5 µL	26s ga	43 mm	2
87988	5 µL	26s ga	43 mm	AS
87989	5 µL – 6 pk	26s ga	43 mm	AS
87991	5 µL	23s ga	43 mm	2
87987	5 µL	23s ga	43 mm	AS
87990	5 µL – 6 pk	23s ga	43 mm	AS
87993	5 µL	23s – 26s ga	43 mm	AS
87994	5 µL – 6 pk	23s – 26s ga	43 mm	AS
80399	10 µL	26s ga	43 mm	2
80388	10 µL	26s ga	43 mm	AS
80389	10 µL – 6 pk	26s ga	43 mm	AS
80398	10 µL	23s ga	43 mm	2
80387	10 µL	23s ga	43 mm	AS
80390	10 µL – 6 pk	23s ga	43 mm	AS
80080*	10 µL	23s ga	43 mm	AS
80094*	10 µL – 6 pk	23s ga	43 mm	AS
80393	10 µL	23s – 26s ga	43 mm	AS
80391	10 µL – 6 pk	23s – 26s ga	43 mm	AS
80079*	10 µL	23s – 26s ga	43 mm	AS
80096*	10 µL – 6 pk	23s – 26s ga	43 mm	AS

*These are Gastight syringes.

Removable Needle (RN)



P/N	Volume	Gauge	Length	Point
87958	5 µL	26s ga	43 mm	AS
87957	5 µL	23s ga	43 mm	AS
87959	5 µL	23s – 26s ga	43 mm	AS
80358	10 µL	26s ga	43 mm	AS
80088*	10 µL	26s ga	43 mm	AS
80357	10 µL	23s ga	43 mm	AS
80087*	10 µL	23s ga	43 mm	AS
80359	10 µL	23s – 26s ga	43 mm	AS
80089	10 µL	23s – 26s ga	43 mm	AS

*These are Gastight syringes.



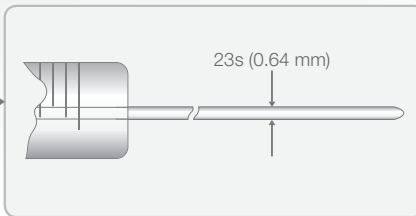
Point Styles

Point 2 Point 3 Point 4 Point 5 Point AS

Needle Gauges

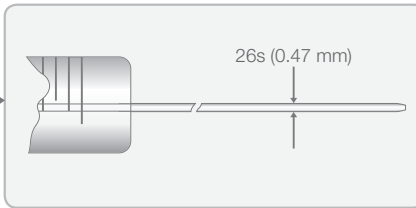
Choosing the Appropriate Agilent Needle

23s Gauge
Needle Syringes



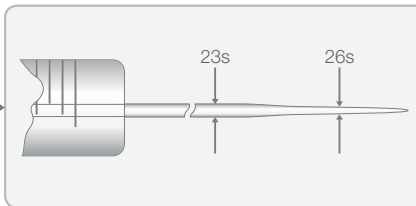
- Merlin Microseal™ septum and standard septum-equipped gas chromatographs
- Packed column injector ports
- Split/splitless injector ports

26s Gauge
Needle Syringes



- On-Column injector ports
- Split/splitless injector ports

23s – 26s (Tapered) Gauge
Needle Syringes



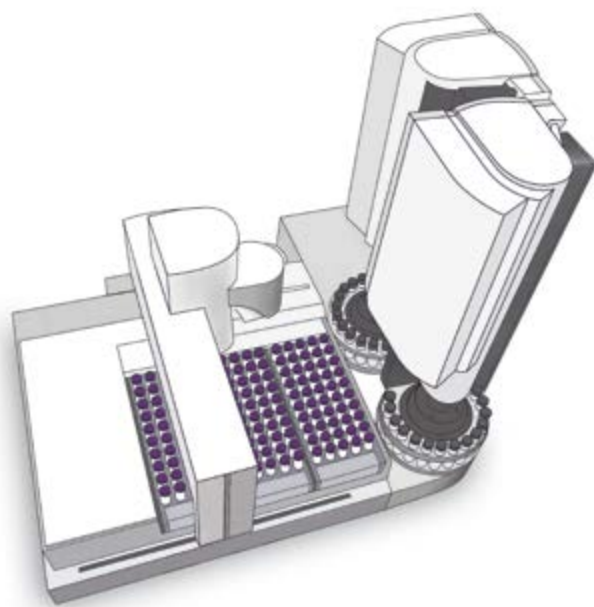
- Durability of a 23s gauge needle
- Ability of a 26s gauge needle to perform split/splitless and on-column injections



Agilent Syringes

7693A ALS

The 7693A builds on the proven Agilent Autosampler technologies that have worked reliably for customers in the past, including dual simultaneous injection and patented fast injection. The 7693A takes it one step further, adding basic sample preparation capabilities such as dilution, internal standard addition, heating, and more.



Special Termination



P/N	Volume	Gauge	Length	Point
86274	0.5 µL	26 ga	43 mm	AS
86276	0.5 µL	23 ga	43 mm	AS
80176	1 µL	23 ga	43 mm	AS

Cemented Needle (N)



P/N	Volume	Gauge	Length	Point
87988	5 µL	26s ga	43 mm	AS
87989	5 µL – 6 pk	26s ga	43 mm	AS
87987	5 µL	23s ga	43 mm	AS
87990	5 µL – 6 pk	23s ga	43 mm	AS
87993	5 µL	23s – 26s ga	43 mm	AS
87994	5 µL – 6 pk	23s – 26s ga	43 mm	AS
80388	10 µL	26s ga	43 mm	AS
80389	10 µL – 6 pk	26s ga	43 mm	AS
80387	10 µL	23s ga	43 mm	AS
80390	10 µL – 6 pk	23s ga	43 mm	AS
80080*	10 µL	23s ga	43 mm	AS
80094*	10 µL – 6 pk	23s ga	43 mm	AS
80393	10 µL	23s – 26s ga	43 mm	AS
80391	10 µL – 6 pk	23s – 26s ga	43 mm	AS
80079*	10 µL	23s – 26s ga	43 mm	AS
80096*	10 µL – 6 pk	23s – 26s ga	43 mm	AS

*These are Gastight syringes.

Removable Needle (RN)



P/N	Volume	Gauge	Length	Point
87958	5 µL	26s ga	43 mm	AS
87957	5 µL	23s ga	43 mm	AS
87959	5 µL	23s – 26s ga	43 mm	AS
80358	10 µL	26s ga	43 mm	AS
80088*	10 µL	26s ga	43 mm	AS
80357	10 µL	23s ga	43 mm	AS
80087*	10 µL	23s ga	43 mm	AS
80359	10 µL	23s – 26s ga	43 mm	AS
80089*	10 µL	23s – 26s ga	43 mm	AS

*These are Gastight syringes.



Bruker Varian Syringes

8100, 8200



Special Termination



P/N	Volume	Gauge	Length	Point
202880	10 µL	26s ga	50.5 mm	5

Note: Replacement needles for this syringe are part number 202903.

Bruker Varian Syringes

CP-8400/8410,
CP-9010/9050



Cemented Needle (N)



P/N	Volume	Gauge	Length	Point
80300	10 µL	26s ga	51 mm	2
80339	10 µL	26s ga	51 mm	5
80342	10 µL	23s ga	51 mm	AS
80330*	10 µL	26s ga	51 mm	2

**This is a Removable Needle (RN) syringe.*

Bruker Varian Syringes

CP-9020/9025


Luer Tip Cemented Needle (LTN)



P/N	Volume	Gauge	Length	Point
202660	2.5 mL	22 ga	56 mm	5



Point Styles

Point 2  Point 3  Point 4  Point 5  Point AS 

CTC / LEAP PAL GC Syringes

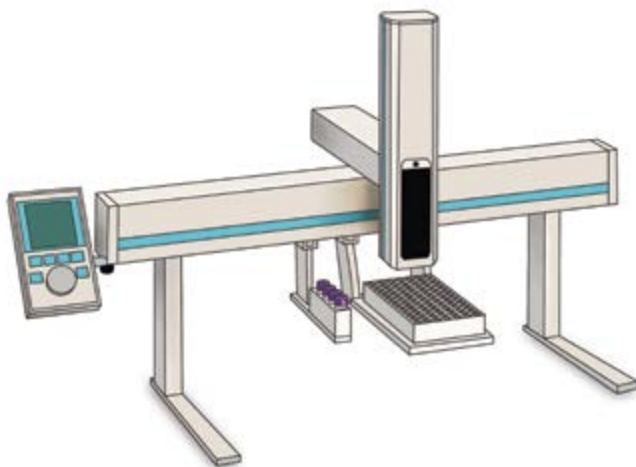
CTC PAL[®] autosamplers are one of the most popular sampling devices on the market today for GC and headspace analyses. Customers rely on its ability to sample from many different vial and well types and on its ultimate platform flexibility. The syringe is at the heart of every injection that the GC PAL[®] system performs, and CTC chose Hamilton to provide this critical component.

S-Line Syringes

S-Line syringes are the cost-effective choice for CTC PAL autosampler applications. S-Line syringes deliver great performance in everyday use for GC injections at an exceptional value. Fast injection speeds in GC analyses put considerable stress on syringe plungers and, as plungers wear the stresses increase, leading to broken syringes and unnecessary downtime and wasted money when samples cannot be analyzed.

C-Line Syringes

C-Line syringes incorporate several unique design features that ensure superior performance. The unique flange alignment design aids in installation and results in fewer bent needles while the plunger button can be adjusted to prevent plunger tip damage. An innovative direct attachment design of the needle to the barrel minimizes sample carryover.



S-Line Syringe



P/N	Volume	Barrel (O.D.)	Gauge	Point
67436-01	5 µL	6.6 mm	26s ga	AS
67438-01	10 µL	6.6 mm	26s ga	AS
67440-01	10 µL	6.6 mm	23s ga	AS
67454-01*	10 µL	6.6 mm	23s ga	AS
67430-01*	25 µL	7.9 mm	23 ga	AS
67434-01*	100 µL	6.6 mm	23 ga	AS

*These are Gastight syringes.

C-Line Syringes



P/N	Volume	Barrel (O.D.)	Gauge	Point
203185	1.2 µL	6.6 mm	26 ga	AS
203189	5 µL	6.6 mm	26s ga	AS
203197	5 µL	6.6 mm	Custom	Custom
203205	10 µL	6.6 mm	26s ga	AS
203363	10 µL	6.6 mm	23s ga	2
203361	10 µL	6.6 mm	23s ga	AS
203362	10 µL	6.6 mm	23s – 26s ga	AS
203198	10 µL	6.6 mm	Custom	Custom
203206*	10 µL	6.6 mm	Custom	Custom
200740**	10 µL	6.6 mm	32 ga	4 at 45°
200742***	10 µL	6.6 mm	32 ga	4 at 45°
203074*	25 µL	6.6 mm	26s ga	AS
203043*	25 µL	7.9 mm	26s ga	AS
203209*	25 µL	6.6 mm	Custom	Custom
203076*	100 µL	6.6 mm	26s ga	AS
203226*	100 µL	6.6 mm	Custom	Custom
203078*	250 µL	7.9 mm	26 ga	AS
203219*	250 µL	7.9 mm	Custom	Custom
203080*	500 µL	7.9 mm	26 ga	AS
203225*	500 µL	7.9 mm	Custom	Custom

*These are Gastight syringes.

**This part number is 85 mm in length.

***This part number is 75 mm in length.

CTC / LEAP CombiPAL (Headspace) Syringes



HD-Type and HDHT-Type Syringes

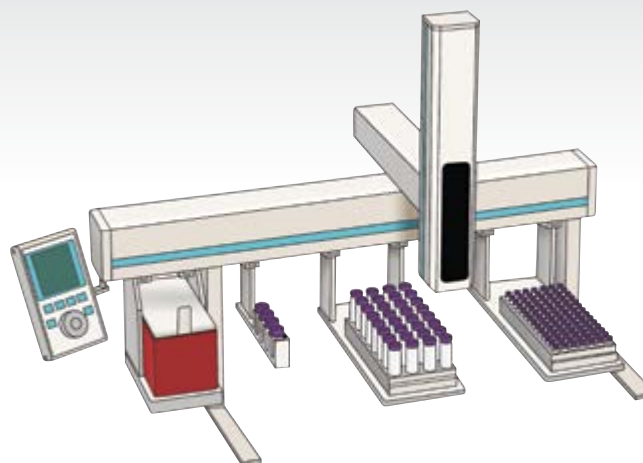
Modern GC headspace analysis requires injecting over large temperature ranges. Conventional headspace syringes on the market use a rubber O-ring sealed plunger which has a limited

sealing performance at high temperatures. This is due to varying thermal expansion between the different materials. The high dynamic HD-Type syringe and HDHT-Type syringes employ a unique spring in the plunger tip which compensates for the materials' different expansion coefficients, creating a superior seal over a larger temperature range, improving syringe lifetime.



HDHT-Type Syringes

A cement-free connection between the needle and the glass barrel make HDHT-Type syringes a perfect choice for applications where temperatures up to 200 °C will be used.



HD-Type Syringes (110 °C)



P/N	Volume	Gauge	Point
203141	1 mL	26 ga	5
203082	1 mL	23 ga	5
203181	2.5 mL	26 ga	5
203084	2.5 mL	23 ga	5
203182	5 mL	26 ga	5
203086	5 mL	23 ga	5

HDHT-Type Syringes (200 °C)



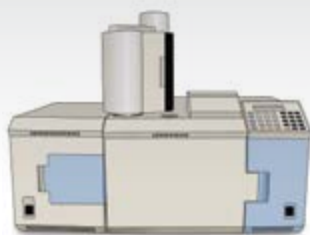
P/N	Volume	Gauge	Point
209682	1 mL	26 ga	5
209681	1 mL	23 ga	5
209684	2.5 mL	26 ga	5
209683	2.5 mL	23 ga	5
209686	5 mL	26 ga	5
209685	5 mL	23 ga	5





Perkin Elmer AutoSystem and Clarus Syringes

500 GC



Special Termination



P/N	Volume	Gauge	Length	Point
88040	5 µL	0.47 mm	70 mm	3
88035	5 µL	0.63 mm	70 mm	3

Shimadzu Syringes

AOC-9

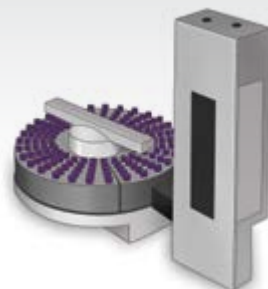
Removable Needle (RN)



P/N	Volume	Gauge	Length	Point
87930	5 µL	26s ga	51 mm	2
80330	10 µL	26s ga	51 mm	2

Shimadzu Syringes

AOC-14,
AOC-17,
AOC-20



Removable Needle (RN)



P/N	Volume	Gauge	Length	Point
202630	5 µL	22s ga	43 mm	2
202640	10 µL	22s ga	43 mm	2
202643*	10 µL	23s ga	43 mm	AS
93898-01**	10 µL	23s ga	43 mm	AS

*Cemented Needle termination with metal flange

**Cemented Needle termination with a glass flange



Point Styles



Thermo Finnigan Syringes

AI/AS 3000
TRIPLUS



Cemented Needle (N)



P/N	Volume	Gauge	Length	Point
204000	5 µL	26s ga	50 mm	2
204051	5 µL	26s ga	50 mm	AS
204001	10 µL	26s ga	50 mm	2
204052	10 µL	26s ga	50 mm	AS

Thermo Finnigan Syringes

AS 800/2000



Cemented Needle (N)



P/N	Volume	Gauge	Length	Point
80318	10 µL	26s ga	80 mm	AS

Thermo Finnigan Syringes

HS 250, 500, 850

Luer Tip Cemented Needle



P/N	Volume	Gauge	Length	Point
202660	2.5 mL	22 ga	56 mm	5