

PRECISION LIQUID HANDLING



Syringes & Valves

Distributed by:



HAMILTON 
THE MEASURE OF EXCELLENCE™



Total Customer Satisfaction

Not just a slogan – it's how we operate.

A supplier can only satisfy you if he meets your day-to-day needs. That is the business we at Hamilton are in. You tell us what you want, we supply you with what you want. We promise to supply you the goods you order

- in the quality you expect,
- at the time you request,
- with the most convenient logistical approach.

It is our task to provide you with the best information resource for making your choice. Such a resource should inform you about

- our complete range of products,
- the intended use of those products,
- where you can get them, and
- their availability.

This catalogue is such an information resource. It presents our entire range of syringes and valves, along with accessories, spare parts and consumables. It includes full information about chromatography applications and instrument syringes in particular. The catalogue helps you to find the correct syringes for the various autosamplers on the market.

Of course, we have a lot of other useful information to tell you. That's exactly why we made this catalogue to be an easy-to-use tool. It will become your indispensable assistant in finding the right syringe.

Your Hamilton Liquid Handling Team



HAMILTON
THE MEASURE OF EXCELLENCE™

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The Measure of Excellence

Highest Quality Materials. From our pioneering efforts in designing and producing the first precision MICROLITER™ syringe, we have crafted our products from the finest materials and have controlled them with the same meticulous care and attention to detail that have become the hallmark of Hamilton products.

Unsurpassed Accuracy and Precision. Every one of our syringes is subjected to extensive quality control procedures and tested to make sure we meet the high expectations of accuracy and precision that you have come to expect from all Hamilton products.

The design of our barrel and plunger dimensions assures high levels of accuracy and precision. Hamilton syringes are manufactured to be accurate within $\pm 1\%$ of nominal volume. The Hamilton Quality System is EN ISO 9001 / EN 46001 certified.



Quality
Accuracy
Precision



For more than 50 years, Hamilton has been satisfying customer needs in the field of precision fluid measuring. It all started with syringes. Not commercial, mass-produced medical syringes, but precision measuring instruments. We at Hamilton combine top quality materials with skilled workmanship, ensuring the highest possible performance level of every precision fluid device we manufacture. With proper care and handling, Hamilton syringes will provide unsurpassed performance in precision fluid handling year after year.

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

Selecting the Right Syringe

Choosing the Right Hamilton Syringe for Your Application



1.

Is your sample a gas or a liquid?

For a gas sample, use a Gastight® syringe.

GASTIGHT® 1000, 1700 and 1800 Series

10 µL to 100 mL

This type of syringe, for use with liquids and gases, features a precision-machined PTFE plunger Tip.

1000/1700 Series

- 1700 Series 10 µL to 500 µL
- 1000 Series 1 mL to 100 mL
- Also available: ground glass tip (luer tip, LT) or PTFE luer lock (TLL) terminations



1800 Series

- 10 µL to 250 µL
- Reinforced plunger prevents plunger blow-out and plunger bending
- Replaceable syringe barrels and plungers



For a liquid sample, choose between a MICROLITER™, MODIFIED MICROLITER™, or a GASTIGHT® syringe.

MICROLITER™ 600, 700, 800 and 900 Series

2.5 µL to 500 µL

This type of syringe, for use with liquids, incorporates a stainless steel plunger that is individually fitted to its matching syringe barrel. The plunger is not interchangeable or replaceable.

600 Series

- 2.5 µL and 5 µL
- Reinforced plungers prevent plunger bending
- Rugged, durable and long lasting



700 Series

- 5 µL to 500 µL
- Economical; great for chromatography
- Also available: ground glass tip (luer tip, LT) termination



800 Series

- 5 µL to 250 µL
- Reinforced plungers
- Plunger stop prevents plunger blow-out



900 Series

- 5 µL to 10 µL
- Reinforced plungers
- Perfect for students: rugged and durable



MODIFIED MICROLITER™ 7000 Series

0.5 µL to 5 µL

- Positive displacement syringe has a tungsten plunger wire that travels inside the needle
- The needle essentially acts as the glass syringe barrel; no dead volume
- Replaceable plunger wire and needle



Selecting the Right Syringe

2.

What is your dispense or injection volume?



For a liquid sample:

Syringe size	600 Series	700 Series	800 Series	900 Series	7000 Series	1000 Series	1700 Series	1800 Series
0.5 µL - 5 µL					✓			
2.5 µL - 5 µL	✓							
5 µL - 10 µL				✓				
5 µL - 250 µL		✓	✓					
10 µL - 250 µL							✓	✓
10 µL - 500 µL		✓					✓	
1 mL - 100 mL						✓		

For a gas sample:

Syringe size	1000 Series	1700 Series	1800 Series
10 µL - 250 µL		✓	✓
10 µL - 500 µL		✓	
1 mL - 100 mL	✓		



3.

Which termination works best for your application?



- **Luer Tip Cemented** - ground glass tip with a cemented needle ; not recommended for use with halogenated solvents, such as MeCl₂
- **PTFE Luer Lock** - can be used with luer (Metal or Kel-F®) hub needles, PTFE tubing assemblies and connectors can be used, offer flexibility
- **Cemented** - not recommended for use with halogenated solvents, such as MeCl₂
- **Luer Tip** - ground glass tip can be used with most hypodermic needles; Kel-F® hub needles, PTFE tubing assemblies and connectors can also be used; offers flexibility
- **Removable** - advantageous for laboratories with multiple users; economical since you can replace the needle without having to purchase a new syringe
- **Knurled Hub** - replaceable needles; used only with the 7000 Series syringes



4.

Which needle point style works best?



Point Style AS: special conical style needle point designed to withstand the demands of multiple injections; exclusively used on autosampler syringes

Point Style 2: 10 - 12° bevelled non-coring needle point recommended for septum penetration; only needle gauges 26s - 22 are recommended for optimum septum penetration

Point Style 3: blunt needle point for use with HPLC injection valves and for sample pipetting

Point Style 4: 10 - 12° bevelled needle point recommended for life science applications; special point styles such as 12°, and 45° are available on request

Point Style 5: conical needle with side port for penetration of septa, thin-gauged vinyls and plastics without coring; minimizes septum damage

5.

Do you need a rugged syringe?



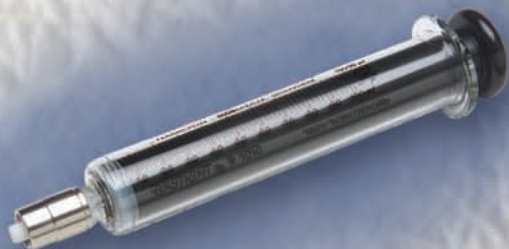
- **Syringe Guide** - easily installed on a syringe to prevent the plunger from bending or from being pulled out
- **Reproducibility (Chaney) Adapter** - easily installed on a syringe for consistent, reproducible injections; also prevents plunger damage
- **Reinforced Plungers** - Series 600, 800, 900 and 1800 syringes offer an extended barrel which prevents bent plungers



Special Syringes

SaltLine Syringes 250 μ L to 10 mL

Designed to be used with gases and liquids. These syringes incorporate a PE (Polyethylene) instead of a PTFE-tipped plunger for better durability when working with salty solutions up to 30 g/L.



Purge & Trap Syringes 5 mL and 25 mL

These syringes are designed for the analysis of drinking water samples according to EPA purge and trap concentration techniques.



Carbon Analyzer Syringes 50 μ L to 250 μ L

For water analysis with Total Organic Carbon (TOC) analyzers. Wetted parts are stainless steel and borosilicate glass. Syringes have a metal luer tapered hub cemented over a MICROLITER™ 700 Series N syringes. The luer hub fits precisely into the inlet of a total carbon analyzer.



PB600 Repeating Dispenser

Consistently dispense sample up to 50 times with the push of a button. The repeating dispenser works with MICROLITER™ or GASTIGHT® syringes from 10 μ L to 10 mL.

Use this Syringe Volume

25 μ L
50 μ L
100 μ L
250 μ L
500 μ L
1 mL
1.25 mL
2.5 mL

μ L Per Dispense

0.5 μ L
1 μ L
2 μ L
5 μ L
10 μ L
20 μ L
25 μ L
50 μ L



SampleLock™ Syringes 50 µL to 100 mL

Lock your sample in the SampleLock Syringe with the easy-to-use twist valve. An internal standard can be injected through the valve port into samples contained in the SampleLock syringe. Also, pre-pressurize gaseous samples prior to GC injection. The positive rear plunger stop prevents loss of sample and plunger blowout at elevated pressures.



Digital Syringe™ 0.5 µL to 500 µL

- The only N.I.S.T. traceable, calibrated syringe device available
- Comes completely calibrated with its own "Certificate of Calibration"
- Easy-to-read LCD screen displays volume dispensed within $\pm 0.5\%$ of the syringe volume
- Used with Hamilton syringes with total volumes of 0.5 to 500 µL



Get the best accuracy and precision data possible from a manually operated syringe with the Digital Syringe!

Unsurpassed Accuracy and Precision

Syringes operated manually require visual positioning of the plunger tip to the desired volume mark on the barrel of the syringe. Proper and consistent positioning of the plunger is often difficult due to subjective and personal mechanical errors. With the Digital Syringe, these problems are eliminated! Achieve accurate and precise injections or dispenses time after time.

Hamilton Certified

The easy-to-read LCD screen displays volumetric information in microliters within $\pm 0.5\%$ of the full scale volume of the syringe. That's at least twice as accurate and precise as compared to the normally published specifications of $\pm 1\%$ for manual syringes. And, Hamilton certifies the specification! The Digital Syringe is the only N.I.S.T. traceable, calibrated syringe device available. You receive a complete measuring instrument:

- A digital display device
- A serialized syringe of your choice
- A Certificate of Calibration

Optimized Plunger Movement

Not only is the Digital Syringe ergonomically pleasing and practical, the plunger movement is optimized for precise measuring.

- A "fine adjustment thumbwheel" allows you to easily dial-in specific syringe volumes.
- A "plunger drag adjustment" optimizes the rate of plunger movement to your personal preference.
- A "plunger brake" prevents premature dispensing of sample from the syringe.
- A built-in "plunger stop" assures you of repetitive, accurate volume displacements every time.

So to achieve unsurpassed accuracy and precision with manual syringe injections or dispenses, ask for a Digital Syringe!



Syringe Accessories

Reproducibility (Chaney) Adapter

For consistent, reproducible injections. It also prevents the plunger from bending. The adjustable stop prevents plunger damage. Easily installed. Available for the 700, 800, 900, 1700, 1800 and 7000 series.

Syringe Guide

Prevents the plunger from bending. It also prevents the plunger from being pulled out. Easily installed. Available from the 700, 1700 and 7000 series.

MTB Sampling Valve

This lever-actuated on/off valve is used for storing and transporting samples in any GASTIGHT® TLL syringe.

Septum Adapter

Store and sample syringe contents with this adapter. It attaches to any TLL syringe of luer lock fitting. The septum is replaceable.

Removable (RN) Adapters

There are three different removable (RN) adapters for 250 µl and larger removable needle (RN) syringes. The port I.D. of 0.029" (0.99 mm) allows sample spiking with a 701 N syringe. It provides connection to threaded fittings, tubing assemblies, tees, and crosses.

Syringe Calibration Service



Hamilton offers a calibration service for precision syringes and Digital Syringes. A Certificate of Calibration is provided with the product and the procedure is performed with an unbroken chain of calibrations traceable to N.I.S.T.

How to Order a Calibrated Syringe

Calibrated precision syringes are available only at the time of purchase.

To order a calibrated syringe, add the prefix "CAL" to the beginning of the syringe's part number.

For example, to order a 701 N, 10 μ l syringe (part # 80300), but calibrated, request part # CAL80300.

Digital Syringes are automatically calibrated prior to shipment. A recalibration service is available for the Digital Syringe. Simply return the digital unit including the syringe. Customer will be charged the calibration fee plus the cost of a new syringe if the original one cannot be recalibrated due to wear and tear.

Tips to Assure Accuracy and Precision

- When using a Hamilton syringe, grasp only the syringe flange and plunger button. By doing so, variations in liquid measurement due to body heat are avoided.
- Pump the plunger with the syringe needle immersed in the fluid to be transferred. This will expel any trapped air in the needle and syringe. Minimize the use of a dry syringe.
- If the plunger is accidentally removed from the syringe barrel wipe it carefully with a lint-free tissue. Reinsert the plunger into the barrel and pump deionized water or acetone through the needle and syringe. In the case of GASTIGHT® plunger, re-wet the PTFE plunger tip prior to reinserting it into the barrel. Avoid touching the plunger since any abrasions, scratches, or oil from one's fingers will often interfere with the proper plunger operation.

Syringe Lubrication

A clean syringe does not require any lubrication grease. Grease may cause a variety of problems including: sample cross contamination, seizing of the plunger in the barrel or barrel damage.

Syringe Terminations

Syringe terminations are offered in a number of different configurations designed to accommodate a broad range of applications. From cemented to removable needles, and luer taper /PTFE luer lock to special syringe fittings, syringe barrel terminations serve a key function at the interface of a syringe and its mating connection.



N, NR (Cemented Needle, Cemented Needle Rheodyne)

Needles are cemented into the glass syringe barrel at a point corresponding to the zero graduation mark. NR stands for syringes with Rheodyne specified needles.



LTN (Luer Tip Cemented Needle)

Needles are cemented into the conical glass luer tip of the barrel at a point corresponding to the zero graduation mark.



SN, LTSN (Special Needle, Luer Tip Special Needle)

Hamilton offers customized syringes with special needles. State the following details: needle length, gauge, point style, and whether electro-tapered. Example of a correct specification: 701 SN, 70 mm, gauge 25, point style 3, not electro-tapered. Without these details the corresponding standard syringe 701 N will be supplied.



LT (Luer Tip)

Ground glass syringe barrel with a male luer taper accepts most hypodermic needles. Use Kel-F[®] hub needles and connectors for a tight seal.



RN, RNR (Removable Needle, Removable Needle Rheodyne)

Removable needles seat precisely to the zero graduation mark of the syringe. Allows the use of different specification needles on the same syringe barrel. RNR stands for syringes with Rheodyne specified removable needles.



KH (Knurled Hub)

Removable needle, knurled hub is used on 7000 Series syringes, exclusively. The attachment of a spacer enables repeatable depth injections.



CA (Carbon Analyzer)

Special male luer tapered hub is cemented on the syringe barrel. Used with TOC (total organic carbon) analyzers.



CR (Constant Rate)

Special, male, luer tapered hub fits most popular TOC (total organic carbon) analyzers. Used for semi-automatic, TOC injections with a constant injection rate, injection depth and sample volume.



SL (SampleLock™)

On/Off syringe valve with RN needle is cemented to a syringe barrel. Used for headspace, environmental sample collection and storage, pre-pressurization of gaseous samples for GC analysis, and sample spiking.



TLL, TLLX (PTFE Luer Lock)

Male luer taper with nickel-plated brass hub accepts, and locks in place, luer hub needles and connectors. The X-style plunger stop incorporates a 6-32 UNC female thread on the end of the stop to allow attachment to drive arm mechanisms, such as on the MICROLAB 500 Series diluters/dispensers.



TLLXB (TLL With Stop & Backbushing)

Used in drive arm mechanisms, such as on MICROLAB 4000 or PSD2. Back-bushing syringes increase plunger tip life, maintain proper plunger alignment and reduce the particles generated by plunger to glass contact.



TLL-XL (60 mm TLL Syringe)

These 60 mm stroke TLL-style syringes are compatible with many liquid handling instruments, including XL-3000 modular digital syringe pump, Tecan, Rosys, Cavro IQ series sample processors and OEM liquid handling applications.



TLL/TLLX Short Stroke

These syringes are designed specifically for the PSD3 (half-height syringe pump).



C, CX (Cheminert)

1/4"-28 UNF, male fitting. Used in low volume applications where system dead volumes need to be minimized. The X-style plunger stop incorporates a 6-32 UNC female thread on the end of the stop to allow attachment to drive arm mechanisms, such as on the MICROLAB 500 Series diluters/dispensers.



C-XP (30 mm C Syringe)

These 30 mm stroke C-style syringes are compatible with many liquid handling instruments, including XL-3000 modular digital syringe pump, Tecan, Rosys, Cavro IQ series sample processors and OEM liquid handling applications.

Syringe Terminations



DX (Diluter)

TLL, PTFE Luer Lock, male fitting with M6 x 1 female, side port. The X-style plunger stop incorporates a 6-32 UNC female thread on the end of the stop to allow attachment to drive arm mechanisms, such as on the MICROLAB 500 Series diluters/dispensers.



AD (AccuDil®)

M8 x 0.75, male fitting. Used with MICROLAB 1000 PLUS diluter/dispenser.



DAD (Diluter AccuDil®)

M8 x 0.75 male fitting with M6 x 1 side port. Used with MICROLAB 1000 PLUS diluter/dispenser.

Syringe Problems and Solutions

Problem	Syringe Solution	Syringe Series
Bending plungers	Reinforced plunger syringes Use a reproducibility adapter or syringe guide	600, 800, 900, 1800 700, 800, 900, 7000 1000, 1700, 1800
Breaking syringe barrels	Replaceable barrel syringes	800, 1800
Bending needles	Removable needle (RN) syringes	600, 700, 800, 900, 1000, 1700, 1800, 7000
Syringe balance	Syringes with handles	800, 900, 1800
Plungers pulling or blowing-out of syringe barrel	Pull or blow-out prevention syringes	800, 1800, SampleLock™ syringes
Plungers slide too easily	Adjustable plunger drag syringes	800, 1000, 1700, 1800

DON'T FORGET: (for GASTIGHT® syringes)

Wet the PTFE plunger tip before inserting the plunger into the glass barrel.

Needle Point Styles

Several different needle point styles are offered on Hamilton syringe and needle products depending upon the application. Syringes and needles manufactured by Hamilton Company are intended for scientific research and laboratory use only and are not intended for human *in vivo* use.

Point Style 2:

10° - 12° Bevelled, non-coring needle point recommended for septum penetration.



Point Style 3:

Blunt needle point for use with HPLC injection valves and for sample pipetting.



Point Style 4:

10° - 12° bevelled needle point recommended for life science applications. Special point styles such as 12°, and 45° are available on request.



Point Style 5:

Conical needle with side port for penetration of septa, thin-gauged vinyls and plastics without coring.



Point Style AS:

Special conical style needle point used exclusively on autosampler syringes.


















700 Series MICROLITER™ Syringes

5 µL - 500 µL

- For use with liquids
- Cemented needles (N), removable needles (RN), or luer tip (LT)
- Plungers and syringe barrels are not interchangeable or replaceable
- Tight tolerances between the plunger and the barrel



Ordering Information

		Volume	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
		Model	75	701	702	705	710	725	750
		Gauge**	26s	26s	22s	22s	22s	22s	22
N (Cemented Needle) point style 2			87900	80300	80400	80500	80600	80700	80800
N (Cemented Needle) point style 2				80350					
N (Cemented Needle) point style 2				80384					
N (Cemented Needle) point style 3			87919	80383 80365 ²⁾	80465	80565	80665	80765 ¹⁾	80865
N (Cemented Needle) point style 5			87939	80339					80839
SN (Cemented Needle) Specify needle gauge, length, point style, and whether electro-tapered			87908	80308	80408	80508	80608	80708	80808
RN (Removable Needle) point style 2			87930	80330	80430	80530	80630	80730	80830
RN (Removable Needle) Syringe Needle not included			7634-01	7635-01	7636-01	7637-01	7638-01	7639-01	7640-01

Ordering Information

Volume	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
Model	75	701	702	705	710	725	750
Gauge**	26s	26s	22s	22s	22s	22s	22

LT (Luer Tip)

Needle not included



80301 80401 80501 80601 80701 80801

Digital Syringe

Base unit plus syringe of your choice



Add the prefix "DS" to the beginning of the syringe's part number.
(Digital Syringes are automatically calibrated prior to shipment. Base unit not sold separately)



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

PB600 Repeating Dispenser

Syringe not included



83700 83700 83700 83700 83700

Reproducibility (Chaney) Adapter

Syringe not included



14700 14700 14700 14700 14700 14700 14700

Syringe Guide

Syringe not included



14806 14806 14906 14906 14906 14906 14906

1) Needle gauge is 22

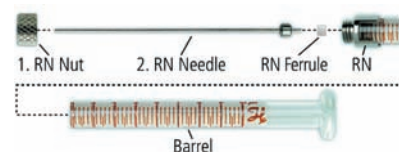
2) Needle gauge is 22s

Operating Parameters

- Maximum temperature for Cemented Needle is 50° C and all others 115° C.
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
1. RN Nut	Model	75	701	702	705	710	725	750
2. RN Needle, see page 53		30902	30902	30902	30902	30902	30902	30902



700 Series MICROLITER™ Six Packs

- Savings! Syringes cost less in six packs
- Convenience! Packaging container lets you keep syringes close at hand

Ordering Information

Volume	10 µL
Model	701
Gauge**	26s

N (Cemented Needle)

point style 2



80366

RN (Removable Needle)

point style 2



80336



600 Series MICROLITER™ Syringes

2.5 µL - 5 µL

- For use with liquids
- Removable needles (RN)
- Reinforced plungers
- Plungers and syringe barrels are not interchangeable or replaceable



Ordering Information

		Volume	2.5 µL	5 µL
		Model	62	65
		Gauge**	22s	22s
RN (Removable Needle) point style 3			87942	87943
RN (Removable Needle) Syringe Needle not included			7632-01	7633-01



Syringe Calibration Service

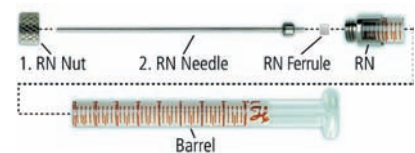
Add the prefix "CAL" to the beginning of the syringe's part number.

Operating Parameters

- Maximum temperature is 115°C.
- Maximum test pressure is 6 bar.

Replacement Parts

	Volume	2.5 µL	5 µL
Description	Model	62	65
1. RN Nut		30902	30902
2. RN Needle, see page 53			










7000 Series MODIFIED MICROLITER™ Syringes

0.5 µL - 5 µL

- For use with liquids
- Removable needles (KH)
- Positive displacement
- Sample contained in the needle
- No dead volume
- Replaceable syringe parts





Ordering Information

	Volume	0.5 µL	0.5 µL	1 µL	1 µL	2 µL	2 µL	5 µL
	Model	7000.50C	7000.5	7001	7101	7002	7102	7105
	O. D.**	0.23	0.50	0.47	0.70	0.50	0.63	0.56
KH (Knurled Hub) point style 2	 		86259	80135	86211	88411	88511	88011
KH (Knurled Hub) point style 3	 	86257 ¹⁾	86250	80100	86200	88400	88500	88000
SN (Special Needle) Specify needle length, and point style	 		86251 ²⁾	80108 ²⁾	86208 ²⁾	88408 ²⁾	88508 ²⁾	200690 ²⁾
Digital Syringe Base unit plus syringe of your choice		Add the prefix "DS" to the beginning of the syringe's part number. (Digital Syringes are automatically calibrated prior to shipment. Base unit not sold separately)						



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

Reproducibility (Chaney) Adapter Syringe not included		14700	14700	14700	14700	14700	14700	14700
Syringe Guide Syringe not included		200399	200399	200399	200399	200399	200399	200399

1) Needle length is 100 mm

2) Max. needle length is 130 mm

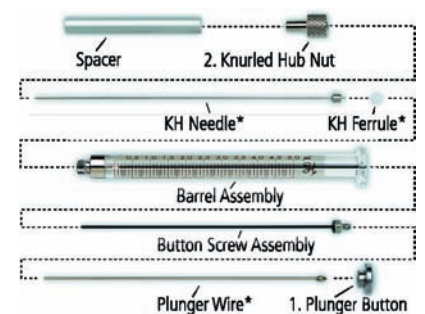
Operating Parameters

- Maximum temperature is 50° C.
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume Model	0.5 µL	0.5 µL	1 µL	1 µL	2 µL	2 µL	5 µL
		7000.50C	7000.5	7001	7101	7002	7102	7105
1. Plunger Button		17778	17778	17778	17778	17778	17778	17778
2. Knurled Hub Nut		17658	17789	17789	17789	17789	17789	17789
3. Repair Kit ¹⁾ Point Style 2			17887	17888	17890	17891	17892	17893
Repair Kit ¹⁾ Point Style 3		86258	17187	17188	17190	17191	17192	17193
Repair Kit ¹⁾ SN			17880	17881	17882	17883	17884	17885
4. Spacer 25 mm		86201	86201	86201	86201	86201	86201	86201
Spacer 38 mm		86202	86202	86202	86202	86202	86202	86202
Spacer 51 mm		86203	86203	86203	86203	86203	86203	86203

1) Repair kit includes KH needle, KH ferrule, and plunger wire.



*3. Repair kit includes KH needle, KH ferrule, plunger wire and instruction sheet.








800 Series MICROLITER™ Syringes

5 µL - 250 µL

- For use with liquids
- Removable needles (RN) or cemented needles (N)
- Reinforced plungers
- Barrel/plunger assemblies are replaceable
- Plunger stop prevents plunger blowout



Ordering Information

		Volume	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL
		Model	85	801	802	805	810	825
		Gauge**	26s	26s	22s	22s	22s	22s
N (Cemented Needle) point style 2			84850	84852	84854	84856	84858	84860
SN (Cemented Needle) Specify needle gauge, length, point style, and whether electro-tapered			84801	84803	84865	84866	84867	84868
RN (Removable Needle) point style 2			84851	84853	84855	84857	84859	84861
RN (Removable Needle) Syringe Needle not included			7641-01	7642-01	7643-01	7644-01	7645-01	7646-01



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

Reproducibility (Chaney) Adapter

Syringe not included



32146	32146	32146	32146	32146	32146	32146
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Operating Parameters

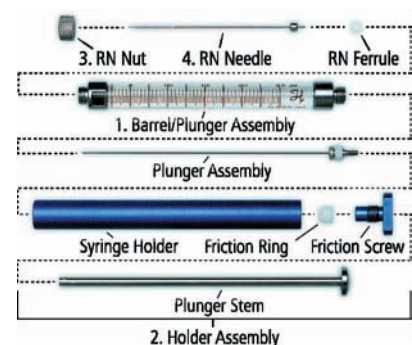
- Maximum temperature for Cemented Needle is 50° C and Removable Needle 115° C.
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume Model	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL
1. Barrel/Plunger Assembly N		32150	32151	32152	32153	32154	32155
Barrel/Plunger Assembly SN ¹⁾		32105	32158	32159	32160	32161	32162
Barrel/Plunger Assembly RN		32164	32165	32166	32167	32168	32169
B/P Assembly RN Syringe ²⁾		32134	32129	32117	32120	32123	32126
2. Holder Assembly		32135	32135	32135	32135	32135	32135
3. RN Nut		30902	30902	30902	30902	30902	30902
4. RN Needle, see page 53							

¹⁾ Specify needle gauge, length, point style, and whether electro-tapered

²⁾ Needle not included










900 Series MICROLITER™ Syringes

5 µL - 10 µL

- For use with liquids
- Removable needles (RN) or cemented needles (N)
- Reinforced plungers
- Plungers and syringe barrels are not interchangeable or replaceable



Ordering Information

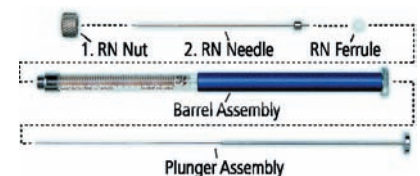
		Volume	5 µL	10 µL
		Model	95	901
		Gauge**	26s	26s
N (Cemented Needle) point style 2	  (**/51/2)		87920	80360
RN (Removable Needle) point style 2	  (**/51/2)		87925	80370
RN (Removable Needle) Syringe Needle not included			7647-01	7648-01
	Syringe Calibration Service		Add the prefix "CAL" to the beginning of the syringe's part number.	
Reproducibility (Chaney) Adapter Syringe not included			32148	32148

Operating Parameters

- Maximum temperature for Cemented Needle is 50° C and Removable Needle 115° C.
- Maximum test pressure is 6 bar.

Replacement Parts

	Volume	5 µL	10 µL
Description	Model	95	901
1. RN Nut		30902	30902
2. RN Needle, see page 53			






















1700 Series GASTIGHT® Syringes

10 µL - 500 µL









- For use with gases and liquids
- Precision-machined PTFE-tipped plungers
- Replaceable plungers



Ordering Information

		Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
		Model	1701	1702	1705	1710	1725	1750
		Gauge**	26s	22s	22s	22s	22s	22
N (Cemented Needle) point style 2			80000	80200	80900	81000	81100	81217 ¹⁾
N (Cemented Needle) point style 3			80075	80275	80975	81075	81175	81216 ¹⁾
N (Cemented Needle) point style 5			80039	80239	80939	81039	81139	81243 ¹⁾
SN (Cemented Needle) Specify needle gauge, length, point style, and whether electro-tapered			80008	80208	80908	81008	81108	81214 ¹⁾
RN (Removable Needle) point style 2			80030	80230	80930	81030	81130	81230
RN (Removable Needle) point style 3			80065 ²⁾	80265	80965	81065	81165 ²⁾	81265
RN (Removable Needle) Syringe Needle not included			7653-01	7654-01	7655-01	7656-01	7657-01	7658-01
LT (Luer Tip) Needle not included			80001	80201	80901	81001	81101	81201
SampleLock Syringe point style 2					80956	81056	81156	81256
TLL (PTFE Luer Lock) w/o slots Needle not included					80920	81020	81120	81220
TLL with slots Needle not included					80927	81027	81127	81227
TLLX, TLL with stop Needle not included				80222	80922	81022	81122	81222


Ordering Information

		Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
		Model	1701	1702	1705	1710	1725	1750
		Gauge**	26s	22s	22s	22s	22s	22
TLL-XL Needle not included					201790	201797	201802	201807
TLLXB, TLL with stop & backbushing Needle not included				80223	80947	81047	81147	81247
DX, Diluter with stop Needle not included				80226	80926	81026	81126	81226
AD, AccuDil® with stop Needle not included					201000	201050	201100	201150
DAD, Diluter AccuDil® with stop Needle not included					201500	201550	201600	201650
CX, CHEM with stop Needle not included			80062	80262	80962	81062	81162	81262
C-XP Needle not included					201720	201730	201740	201750
Digital Syringe Base unit plus syringe of your choice		Add the prefix "DS" to the beginning of the syringe's part number. (Digital Syringes are automatically calibrated prior to shipment. Base unit not sold separately)						



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

PB600 Repeating Dispenser Syringe not included		83700	83700	83700	83700	83700	83700	83700
Reproducibility (Chaney) Adapter Syringe not included		14700	14725	14725	14725	14725	14725	14725
Syringe Guide Syringe not included		14806	14906	14906	14906	14906	14906	14906

1) LTN type syringe

2) Needle gauge is 22

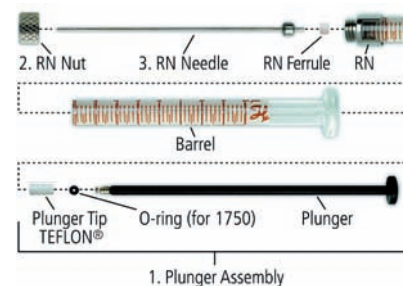
Operating Parameters

- Maximum temperature for Cemented Needle is 50° C and all others 115° C.
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
	Model	1701	1702	1705	1710	1725	1750
1. Plunger Assembly N		13205	1122-01	1162-01	1162-02	1162-03	1169-01
Plunger Assembly RN		13205	1122-01	1162-01	1162-02	1162-03	1169-01
Plunger Assembly LT/LTN		13205	1122-01	1162-01	1162-02	1162-03	13219
Plunger Assembly SampleLock				1162-01	1162-02	1320-01	1321-01
Pl. Assem. TLL w/ & w/o Slots			13269	1162-01	1162-02	1162-03	13219
Plunger Assembly TLLX/DX/CX		13200 ¹⁾	13269	1117-01	1117-02	1117-03	1120-01
Plunger Assembly TLL-XL				201793	201800	201805	201810
Plunger Assembly AD				201020	201070	201120	201170
Plunger Assembly DAD				201520	201570	201620	201670
Plunger Assembly C-XP				201725	201735	201745	201755
2. RN Nut		30902	30902	30902	30902	30902	30902
3. RN Needle, see page 53							

1) Only for CX syringes






















1000 Series GASTIGHT® Syringes

1 mL - 100 mL









- For use with gases and liquids
- Precision-machined PTFE-tipped plungers
- Replaceable plungers



Ordering Information

		Volume	1 mL	1.25 mL	2.5 mL	5 mL	10 mL	25 mL	50 mL	100 mL
		Model	1001	1001.25	1002	1005	1010	1025 ¹⁾	1050 ¹⁾	1100 ¹⁾
		Gauge**	22	22	22	22	22	22	22	22
LTN (Cemented Needle) point style 2			81317	82017	81417	81517	81617			
LTN (Cemented Needle) point style 3			81316		81416	81516	81616			
LTN (Cemented Needle) point style 5			81343		81443	81543	81643			
LTSN (Cemented Needle) Specify needle gauge, length, point style, and whether electro-tapered			81314		81414	81514	81614			
RN (Removable Needle) point style 2			81330		81430	81530	81630			
RN (Removable Needle) point style 3			81365							
RN (Removable Needle) Syringe Needle not included			7649-01		7650-01	7651-01	7652-01			
LT (Luer Tip) Needle not included			81301	82001	81401	81501	81601			
SampleLock Syringe point style 2			81356		81456	81556	81656	86326	86336	86346
TLL (PTFE Luer Lock) w/o slots Needle not included			81320		81420	81520	81620	82520	85020	86020
TLL with slots Needle not included			81327		81427	81527	81627	82527	85027	
TLL w/o flange, w/o slots Needle not included								82521	85021	

Ordering Information

	Volume	1 mL	1.25 mL	2.5 mL	5 mL	10 mL	25 mL	50 mL	100 mL
	Model	1001	1001.25	1002	1005	1010	1025 ¹⁾	1050 ¹⁾	1100 ¹⁾
	Gauge**	22	22	22	22	22	22	22	22
TLL w/o flange, with slots Needle not included							82525	85025	
TLL-XL Needle not included		201812		201817	201822	201827			
DX, Diluter with stop Needle not included		81326							
AD, AccuDil® with stop Needle not included		201200		201250	201300	201350	201400		
DAD, Diluter AccuDil® with stop Needle not included		201700							
C, CHEM Needle not included		81360		81460	81560	81660			
C-XP Needle not included		201760		201770	201780				
W Needle not included						81610			



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

PB600 Repeating Dispenser

Syringe not included



83700 83700 83700

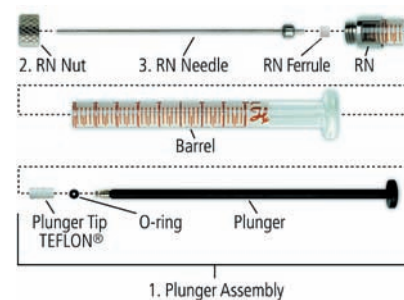
1) TLL male luer fitting is made of Kel-F® (CTFE) material instead of PTFE

Operating Parameters

- Maximum temperature for Cemented Needle is 50° C and all others 115° C.
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume Model	1 mL	2.5 mL	5 mL	10 mL	25 mL	50 mL	100 mL
		1001	1002	1005	1010	1025	1050	1100
1. Plunger Assembly LT/LTN/ TLL w/ & w/o Slots		1359-01	1360-01	13230	13231	13271 ¹⁾	13272	52343-01 ²⁾
Plunger Assembly RN		1359-01	1360-01	13230	13231			
Plunger Assembly SampleLock		1343-01					1615-02	1615-03
Plunger Assembly TLLX		200920						
Plunger Assembly TLL-XL		201815	201820	201825	201829			
Plunger Assembly DX		1578-01						
Plunger Assembly AD/DAD		201220	201270	201301	201370	13271		
Plunger Assembly C		1359-01	1360-01	13291	13292			
Plunger Assembly C-XP		201765	201775	201785				
2. RN Nut		30902	30902	30902	30902	30902	30902	30902
3. RN Needle, see page 53								



1) For P/N 82525 use Plunger assembly P/N 200980

2) Consists of a spindle/tip assembly








1800 Series GASTIGHT® Syringes

10 µL - 250 µL

- For use with gases and liquids
- Removable needles (RN) or cemented needles (N)
- Precision-machined PTFE-tipped plungers
- Reinforced plungers
- Plunger assemblies and glass barrels are replaceable



Ordering Information

		Volume	10 µL	25 µL	50 µL	100 µL	250 µL
		Model	1801	1802	1805	1810	1825
		Gauge**	26s	22s	22s	22s	22s
N (Cemented Needle) point style 2			84875	84878	84881	84884	84887
SN (Cemented Needle) Specify needle gauge, length, point style, and whether electro-tapered			84876	84879	84882	84885	84888
RN (Removable Needle) point style 2			84877	84880	84883	84886	84889
RN (Removable Needle) Syringe Needle not included			7659-01	7660-01	7661-01	7662-01	7663-01



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

Reproducibility (Chaney) Adapter

Syringe not included



32146

32146

32146

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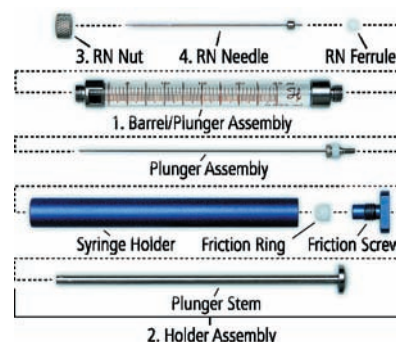
32146

Operating Parameters

- Maximum temperature for Cemented Needle is 50° C and Removable Needle 115° C.
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume Model	10 µL 1801	25 µL 1802	50 µL 1805	100 µL 1810	250 µL 1825
1. Plunger Assembly N		32193	1160-01	1161-01	1161-02	4871-01
Plunger Assembly RN		32193	1160-01	1161-01	1161-02	4871-01
Glass Barrel N		32175	32176	32177	32178	32179
Glass Barrel SN ¹⁾		32181	32182	32183	32184	32185
Glass Barrel RN ²⁾		32187	32188	32189	32190	32191
2. Holder Assembly		32135	32135	32135	32135	32135
3. RN Nut		30902	30902	30902	30902	30902
4. RN Needle, see page 53						

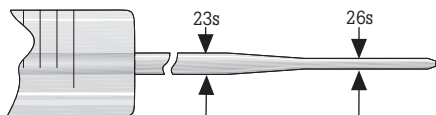


1) Specify needle gauge, length, point style, and whether electro-tapered

2) Needle not included

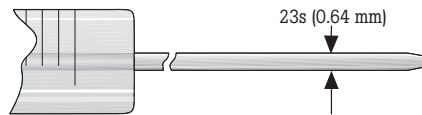
GC Autosampler Syringes

Syringes for Agilent GC Autosamplers



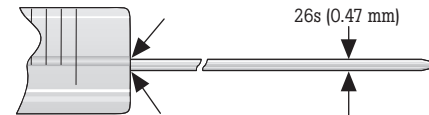
23s-26s Dual Gauge Tapered Needle

- Most popular needle
- Split/splitless or on-column injections
- Versatility without sacrificing durability



23s Gauge Needle

- Most durable needle
- Merlin Microseal™ and standard septum injections
- Packed column injections
- Split/splitless injections



26s Gauge Needle

- Fine gauge offers versatility
- On-column injections
- Split/splitless injections



Ordering Information

7683, 7673 ALS

7670, 7671, 7672 ALS



ASN



ASRN



N

RN

Model	Volume	Gauge**	7683, 7673 ALS			7670, 7671, 7672 ALS		
			23s	26s	23s-26s	23s	26s	23s-26s
MODIFIED MICROLITER™ Syringes								
7000.5	0.5 µL	(**/43/AS)				86276	86274	
7001	1 µL	(**/43/AS)				80176		
7701	1 µL	(**/43/AS)					202460	
7702	2 µL	(**/43/AS)					202980	
MICROLITER™ Syringes								
75	5 µL	(**/43/AS)	87987	87988	87993	87957	87958	87959
75	5 µL 6/pk	(**/43/AS)	87990	87989	87994			
75	5 µL	(**/43/2)	87991	87992				87900 ¹⁾
701	10 µL	(**/43/AS)	80387	80388	80393	80357	80358	80359
701	10 µL 6/pk	(**/43/AS)	80390	80389	80391			
701	10 µL	(**/43/2)	80398	80399				
701	10 µL	(**/51/2)						80300 80338
701	10 µL 6/pk	(**/51/2)						80366
GASTIGHT® Syringes								
175	5 µL	(**/43/AS)	80074		80076			80086
175	5 µL 6/pk	(**/43/AS)	80090		80092			
1701	10 µL	(**/43/AS)	80080		80079	80087	80088	80089
1701	10 µL 6/pk	(**/43/AS)	80094		80096			
1701	10 µL	(**/51/2)						80000 80011

1) Needle length is 51 mm

GC Autosampler Syringes

Six Pack Replacement (RN) Needles for Agilent GC Autosamplers



Ordering Information

Ordering Information		7683, 7673 ALS			7670, 7671, 7672 ALS
Volume	Gauge**	23s	26s	23s-26s	26s
0.5 µL	(**/43/AS)	38065 ¹⁾	38063 ¹⁾		
2 µL	(**/43/AS)		202981 ¹⁾		
5 µL & 10 µL	(**/43/AS)	7786-01	7786-02	7785-01	
10 µL	(**/51/2)				7758-02

¹⁾ Replacement needle offered as repair kit including needle, ferrule, and plunger wire (1/pk)

Syringes for Varian-Chrompack GC Autosamplers



Ordering Information

Part Number	Model	Volume	Gauge/Length/Point Style
CP-8400/8410			
CP-9010/9050			
87900	75 N	5 µL	(26s/51/2)
80300	701 N	10 µL	(26s/51/2)
80366	701 N	10 µL 6/pk	(26s/51/2)
202950	7701 N	1 µL	(.48/51/AS)
CP-9020/9025			
202660	1002 LT HS 22	2.5 mL	(22/51/5)

Syringes for Shimadzu GC Autosamplers



Ordering Information

Part Number	Model	Volume	Gauge/Length/Point Style	Removable Needles (RN), 6/pk
AOC-9				
87930	75 RN 26s	5 µL	(26s/51/2)	7758-02
80330	701 RN 26s	10 µL	(26s/51/2)	7758-02
AOC-14/17/20				
202630	75 RSN	5 µL	(22s/43/2)	202645
202640	701 RSN	10 µL	(22s/43/2)	202645

Syringes for ThermoFinnigan GC Autosamplers



Ordering Information

Part Number	Model	Volume	Gauge/Length/Point Style
HS 250/500/850			
202660	1002 LTN HS 22	2.5 mL	(22/51/5)
202670	1002 LT HS	2.5 mL	without needle
AS 800/2000			
202066	701 SN Fisons	10 µL	(26s/80/AS)
AI/AS 3000			
204000	75 SN	5 µL	(26s/50/2)
204001	701 SN	10 µL	(26s/50/2)
204051	75 SN	5 µL	(26s/50/AS)
204052	701 SN	10 µL	(26s/50/AS)
204922	1701 RN	10 µL	(26s/50/2)

Syringes for Perkin-Elmer™ AutoSystem™ and Clarus500 GC



Ordering Information

Part Number	Model	Volume	O.D./Length/Point Style
88040	75 ASN/PE	5 µL	(0.47/70/3)
88035	75 ASN/PE	5 µL	(0.63/70/3)

GC Autosampler Syringes

Syringes for CTC Combi PAL and GC PAL GC Autosamplers

Ordering Information

Part Number	Model	Volume	Gauge/Point Style	Plunger Assembly, 10/pk
203185	7701.2 CTC	1.2 µL	(0.48 mm O.D./AS)	
203189	75 N CTC (26s/AS)	5 µL	(26s/AS)	
203197 ¹⁾	75 SN CTC (*/*)	5 µL	(*/*)	
203361	701 N CTC (23s/AS)	10 µL	(23s/AS)	
203362	701 N CTC (23s-26s/AS)	10 µL	(23s-26s/AS)	
203363	701 N CTC (23s/2)	10 µL	(23s/2)	
203072	701 N CTC (26s/2)	10 µL	(26s/2)	
203205	701 N CTC (26s/AS)	10 µL	(26s/AS)	
203198 ¹⁾	701 SN CTC (*/*)	10 µL	(*/*)	
203206 ¹⁾	1701 SN CTC (*/*)	10 µL	(*/*)	
203043	1702 CTC (26s/AS)	25 µL	(26s/AS)	203245
203074	1702 CTC (26s/AS) Slim Line	25 µL	(26s/AS)	203245
203275	1702 CTC (*/*) Slim Line	25 µL	(*/*)	203245
203209 ¹⁾	1702 SN CTC (*/*)	25 µL	(*/*)	203245
203076	1710 CTC (26s/AS)	100 µL	(26s/AS)	203246
203226 ¹⁾	1710 SN CTC (*/*)	100 µL	(*/*)	203246
203078	1725 CTC (26/AS)	250 µL	(26s/AS)	203249
203219 ¹⁾	1725 SN CTC (*/*)	250 µL	(*/*)	203249
203080	1750 CTC (26/AS)	500 µL	(26s/AS)	203254
203225 ¹⁾	1750 CTC (*/*)	500 µL	(*/*)	203254

Syringes HEADSPACE Version

Part Number	Model	Volume	Gauge/Point Style	Plunger Assembly, 1/pk
203082	1001 CTC (23/5)	1 mL	(23/5)	203255
203141	1001 CTC (26/5)	1 mL	(26/5)	203255
203084	1002 CTC (23/5)	2.5 mL	(23/5)	203256
203181	1002 CTC (26/5)	2.5 mL	(26/5)	203256
203086	1005 CTC (23/5)	5 mL	(23/5)	203259
203182	1005 CTC (26/5)	5 mL	(26/5)	203259

¹⁾ Specify needle gauge, point style, and whether electro-tapered

Syringes for On-Column Grob GC Injection

Ordering Information

Part Number	Model	Volume	O.D./Length/Point Style
200740	701 N Grob	10 µL	(0.23/85/45°)
200741	75 N Grob	5 µL	(0.23/85/45°)
200742	701 N Grob	10 µL	(0.23/75/45°)
200743	75 N Grob	5 µL	(0.23/75/45°)

High Temperature Septa

These new long life GC autosampler septa are designed to provide the longest life and lowest bleed possible when combined with Hamilton GC autosampler syringes.



Long Life GC Autosampler Septa

Long Life septa are designed for use with GC autosamplers. The 5, 9, 11 and 11.5 mm diameter Long Life septa are available with our unique prepierced center depression which guides the syringe needle to the same injection point, extending septa life and reducing needle bending. The 9.5, 12.7 and 17 mm diameter Long Life septa are supplied without the unique center depression but still provide outstanding longevity at inlet temperatures up to 400° C. Injection life of 400+ injections can be achieved with proper care and the use of Hamilton dual gauge needle GC autosampler syringes.

Low Bleed High Temperature Septa

Low Bleed High Temperature septa are designed for the lowest bleed possible at temperatures up to 400° C. They can be used in combination with Mass Spectrometers or in applications where septa bleed interferes with trace analysis. The 5, 9, 11 and 11.5 mm diameter septa are available with the center depression which guides the syringe needle to the same injection point, extending septa life and reducing needle bending. These septa are typically used for manual injection applications. All of the Low Bleed High Temperature Septa can be used at temperatures up to 400° C. While these septa will not last for as many injections as our Long Life septa, they do last longer than septa from other suppliers and have virtually no bleed.

Ordering Information

Part #	Description
75829	5 mm diameter septa for HP on-column injector port prepunctured center depression 25/pk
75831	9 mm diameter septa, prepunctured center depression 25/pk
75825	9.5 mm diameter septa 25/pk
75826	11 mm diameter septa, prepunctured center depression 25/pk
75832	11.5 mm diameter septa, prepunctured center depression 25/pk
75827	12.7 mm diameter septa 25/pk
75830	17 mm diameter septa 25/pk
75828	Plug style septa for Shimadzu instruments 25/pk

Ordering Information

Part #	Description
75840	5 mm diameter septa for HP on-column injector port prepunctured center depression 50/pk
75834	9 mm diameter septa, center depression 50/pk
75833	9.5 mm diameter septa 50/pk
75838	10 mm diameter septa 50/pk
75835	11 mm diameter septa, center depression 50/pk
75839	11.5 mm diameter septa, center depression 50/pk
75836	12.7 mm diameter septa 50/pk
75841	17 mm diameter septa 50/pk
75837	Plug style septa for Shimadzu instruments 50/pk

HPLC Autosampler Syringes

Syringes for Agilent 1090A LC Autosampler



Ordering Information

Part Number	Model	Volume
202315	1702 RN w/o Needle	25 μ L
202325	1725 RN w/o Needle	250 μ L

Syringes for Shimadzu SIL-6A LC Autosampler



Ordering Information

Part Number	Model	Volume
7656-01	1710 RN w/o Needle	100 μ L

Syringes for Perkin-Elmer™ LC Autosamplers



Ordering Information

Part Number	Model	Volume
Series 200 Autosampler		
80962	1705 CX	50 μ L
81162	1725 CX	250 μ L
81262	1750 CX	500 μ L
81360	1001 C	1 mL
81460	1002 C	2.5 mL

Syringes for Varian 9100 LC Autosampler

Ordering Information

Part Number	Model	Volume
0159902	1710C Special	100 μ L

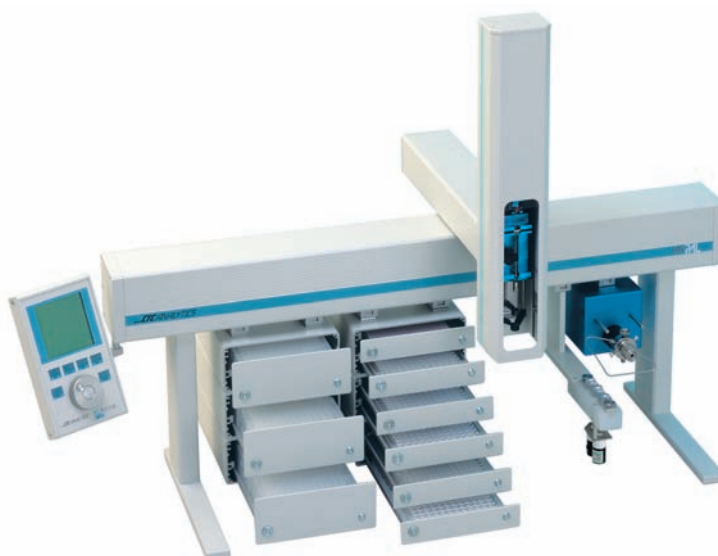
Syringes for WATERS® WISP™ LC Autosampler



Ordering Information

Part Number	Model	Volume	Use
80020	1702 WISP	25 µL	WISP Autosampler
80024	1725 WISP	250 µL	WISP Autosampler
81610	1010 W	10 mL	Manual Priming Syringe for WATERS® Pumps

Syringes for CTC LC Autosamplers



Ordering Information

Part Number	Model	Volume	Gauge/Point Style	Plunger Assembly, 10/pk
LC/HTC/HTS PAL				
203073	701 N CTC (22s/3)	10 µL	(22s/3)	
203194	1701 N CTC (22s/3)	10 µL	(22s/3)	203239
203075	1702 N CTC (22s/3)	25 µL	(22s/3)	203245
203274	1702 N CTC (22s/51/3) Slim Line	25 µL	(22s/3)	203245
203077	1710 N CTC (22s/3)	100 µL	(22s/3)	203246
203235	1710 N CTC (22/3)	100 µL	(22/3)	203246
203079	1725 N CTC (22/3)	250 µL	(22/3)	203249
203349	1750 N CTC (22/3)	500 µL	(22/3)	203254
203081	1001 CTC (22/3)	1 mL	(22/3)	203255 ¹⁾
203083	1002 CTC (22/3)	2.5 mL	(22/3)	203256 ¹⁾
203085	1005 CTC (22/3)	5 mL	(22/3)	203259 ¹⁾
A200S				
203560	1701 CTC (22s/3) A200S	10 µL	(22s/3)	203562
203563	1702 CTC (22s/3) A200S	25 µL	(22s/3)	203565
203566	1710 CTC (22s/3) A200S	100 µL	(22s/3)	203569

1) Plunger assembly 1/pk

HPLC Autosampler Syringes

Syringes for Spectra-Physics/ ThermoFinnigan LC Autosamplers



Ordering Information

Part Number	Model	Volume
SP8780/8875/8880		
202192	1750 C	500 µL
81460	1002 C	2.5 mL
AS100/300 AS1000/3000/3500		
202456	1725 CX	250 µL
202457	1750 CX	500 µL
81360	1001 C	1 mL
81460	1002 C	2.5 mL

Syringes for Kontron 360, 460, and 465 LC Autosamplers



Ordering Information

Part Number	Model	Volume
201050	1710 AD	100 µL

Syringes for Gynkotek Gina/ Dionex ASI-100 LC Autosampler



Ordering Information

Part Number	Model	Volume
7654-01	1702 RN w/o Needle	25 µL
7657-01	1725 RN w/o Needle	250 µL

Syringes for Hitachi L-7200/7250, AS1000/2000/42000, and LaChrom LC Autosamplers



Ordering Information

Part Number	Model	Volume
0160310	1750 Special	500 µL

HPLC Manual Injection Syringes

Syringes for Rheodyne, Valco™, Beckman®/Altex and SSI Injection Valves

Ordering Information

Rheodyne,
Valco VISF-2,
Beckman/Altex,
and SSI

**MICROLITER™
Syringes**



600 RNR



700 NR



1700 N



1700 RNR

**Repl.
Needles**



RN 6/pk

Valco VISF-1

**GASTIGHT® Repl.
Syringes Needles**



1700 RNCP



RN 6/pk

Volume	Gauge/ Length	PSt 3 	PSt 3 	PSt 3 	PSt 3 	PSt 3
2.5 µL	(22s/51)	87942				7770-01
5 µL	(22s/51)	87943				7770-01
10 µL	(22s/51)		80365		80065	7770-01
25 µL	(22s/51)		80465	80275	80265	7770-01
50 µL	(22s/51)		80565	80975	80965	7770-01
100 µL	(22s/51)		80665	81075	81065	7770-01
250 µL	(22/51)		80765	81175	81165	7780-04
500 µL	(22/51)		80865	81216	81265	7780-04
1 mL	(22/51)				81365	7780-04

Volume	Gauge/ Length	PSt 3 	PSt 3
25 µL	(22s/19)	80231	7787-01
50 µL	(22s/19)	80931	7787-01
100 µL	(22s/19)	81031	7787-01
250 µL	(22s/19)	81131	
500 µL	(22/19)	81231	7787-02
1 mL	(22/19)	81331	7787-02
2.5 mL	(22/19)	81431	7787-02
5 mL	(22/19)	81531	7787-02
10 mL	(22/19)	81631	7787-02

Syringes for the WATERS® U6K Injection Valve

Ordering Information

**MICROLITER™
Syringes**



800 RNW

**GASTIGHT®
Syringes**



1700 RNW



1800 RNW



RNW 6/pk

Volume	Gauge/ Length	PSt 3 	PSt 3 	PSt 3 	PSt 3
10 µL	(25s/50)	84815	80038	84977	8647-01
25 µL	(25s/50)	84816	80238	84980	8647-01
50 µL	(25s/50)	84817	80938	84983	8647-01
100 µL	(25s/50)	84818	81038	84986	8647-01
250 µL	(25s/50)	84819	81138	84989	8648-01

Special Syringes



Super Syringes

0.5 L - 2 L

- For use with gases and liquids
- For air sampling, preparing gas standards, calibrating reservoirs, and pneumographs
- PTFE luer lock (TLL) or tracheal adapter (accepts 16 mm I.D. flexible tubing)
- Clear acrylic syringe barrels



Ordering Information

		Volume	0.5 L	1 L	1.5 L	2 L
		Model	S0500	S1000	S1500	S2000
TLL (PTFE luer lock)			86311	86312	86313	86314
Trachel Adapter			86301	86302		

Operating Parameters

- Maximum temperature is 80° C.
- Maximum test pressure is 2 bar.

Optional Accessories

- Septum Adapter, see page 51
- MTB Sampling Valve, see page 51

Replacement Parts

	Volume	0.5 L	1 L	1.5 L	2 L
Description	Model	S0500	S1000	S1500	S2000
1. Tracheal connector		18003	18003	18003	18003
TLL connector		18026	18026	18026	18026
2. Super Syringe Barrel		18050	18051	18052	18066
3. Needles, see page 54					


Constant Rate Syringes

20 µL - 200 µL

- For use with gases and liquids
- Incremental volumes are selected with micrometer precision
- Spring-driven plunger injects samples at a constant rate
- Field repairable with replacement parts



Ordering Information

	Volume	1 - 20 µL	2 - 50 µL	10 - 200 µL
	Model	CR 700-20	CR 700-50	CR 700-200
	µL per Graduation	0.05 µL	0.1 µL	0.5 µL
	Gauge**	22s	22	22
CR (Constant Rate) point style 3	 (**/51/3)	84301	84303	84302

Operating Parameters

- Maximum temperature is 115°C.
- Maximum test pressure is 6 bar.

Replacement Parts

	Volume	1 - 20 µL	2 - 50 µL	10 - 200 µL
Description	Model	CR700-20	CR700-50	CR700-200
1. Plunger Assembly		15909	15944	15910
2. Glass Barrel		15927	15945	15928
3. Needle		15934	15936	15936
4. Spacer		86201	86201	86201

Special Syringes

Carbon Analyzer Syringes

50 µL - 250 µL

- Metal luer tapered hub cemented over a MICROLITER™ 700 Series N syringe
- Plunger are not interchangeable or replaceable



Ordering Information

Part Number	Model	Volume	Gauge/Length/Point Style
80550	705 CA	50 µL	(24/51/3)
80551	705 CA	50 µL	(26/64/3)
80660	710 CA	100 µL	(24/51/3)
80770	725 CA	250 µL	(24/51/3)

Operating Parameters

- Maximum temperature is 50°C.
- Maximum test pressure is 6 bar.

Purge and Trap Syringes

5 mL - 10 mL

- For the analysis of drinking water samples according to EPA purge and trap concentration techniques (see EPA method 502.1, 502.2, 503.1, 524.1, and 524.2)
- SampleLock Purge & Trap GASTIGHT® syringe with an easy-to-use twist valve



Ordering Information

Part Number	Model	Description
81570	1005 SLPT	5 mL Purge & Trap Syringe
82570	1025 SLPT	25 mL Purge & Trap Syringe
80300	701 N	10 µL Syringe (26s/51/3) for adding an internal calibration standard or surrogate sample to the Purge & Trap syringe
86789	HVDP 2-5	Purge & Trap Valve with female luer fitting for use with Tekmar™ and O-I purge and trap concentrators

Operating Parameters

- Maximum temperature is 50° C.
- Maximum test pressure is 6 bar.



Easily remove the syringe plunger and load water sample into the syringe barrel



Add an internal standard or surrogate sample directly to your sample through the twist valve with a 10 µL syringe.



Connect the sample syringe directly to the purge and trap valve via the integral male luer fitting.








PTFE-coated Needle (TLC) Syringes

10 µL - 500 µL

- PTFE-coated needle tip (19 mm) for reproducible sample spotting
- Cemented Needle (NTLC) or removable needle (RNTLC)
- Replaceable syringe barrels, plungers, and needles



Ordering Information

		Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
		Model	1701	1702	1705	1710	1725	1750
		Gauge**	26s	22s	22	22	22	22
NTLC (Cemented Needle) point style 3, PTFE needle		 (**/51/3T)	80050	80250	80950	81050	81150	81250 ¹⁾
RNTLC (Removable Needle) point style 3, PTFE needle		 (**/51/3T)	80055	80255	80955	81055	81155	81255
PB600 Repeating Dispenser Syringe not included			83700	83700	83700	83700	83700	83700
Reproducibility (Chaney) Adapter Syringe not included			14700	14725	14725	14725	14725	14725
Syringe Guide Syringe not included			14806	14906	14906	14906	14906	14906

1) LTN type syringe

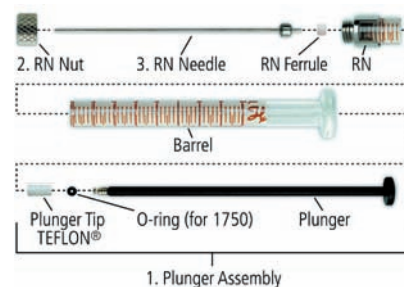
Special Syringes

Operating Parameters

- Maximum temperature for Cemented Needle is 50° C and Removable Needle 115° C
- Maximum test pressure is 6 bar.

Replacement Parts

Description	Volume Model	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
1. Plunger Assembly N		13205	1122-01	1162-01	1162-02	13209	13219
Plunger Assembly RN		13205	1122-01	1162-01	1162-02	1162-03	1169-01
2. RN Nut		30902	30902	30902	30902	30902	30902
3. RN Needle			30980	30981	30981	30983	30983



PB600-1 and Repeating Dispensers

25 µL - 2,5 mL

- Consistently dispense sample up to 50 times with the push of a button
- Works with MICROLITER™ and GASTIGHT® syringes from 25 µL to 2,5 mL
- Optional disposable tips eliminate sample cross-contamination



Ordering Information

Repeating Dispensers

Description	PB 600-1
Part Number ¹⁾	83700
Total Syringe Volume	25 µL - 2.5 mL
µL per Dispense	0.5 µL - 50 µL

¹⁾ Syringe not included

MICROLITER™ Syringes for PB 600-1

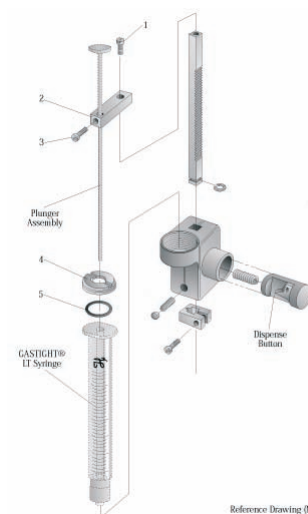
	Model	702	705	710	725	750
	Volume	25 µL	50 µL	100 µL	250 µL	500 µL
Description	µL per Dispense	0.5 µL	1 µL	2 µL	5 µL	10 µL
N (Cemented Needle), point style 3		80465	80565	80665	80765	80865
RN (Removable Needle), point style 2		80430	80530	80630	80730	80830
LT (Luer Tip)		80401	80501	80601	80701	80801

GASTIGHT® Syringes for PB 600-1

	Model	1702	1705	1710	1725	1750	1001	1001.25	1002
	Volume	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	1.25 mL	2.5 mL
Description	µL per Dispense	0.5 µL	1 µL	2 µL	5 µL	10 µL	20 µL	25 µL	50 µL
N (Cemented Needle), point style 3		80275	80975	81075	81175	81216			
RN (Removable Needle), point style 2		80230	80930	81030	81130	81230	81330		81430
LT (Luer Tip)		80201	80901	81001	81101	81201	81301	82001	81401
LTN (Luer Tip Needle), point style 2								82017	
LTN (Luer Tip Needle), point style 3							81316		81416
TLL (PTFE Luer Lock)							81320		81420

Replacement Parts

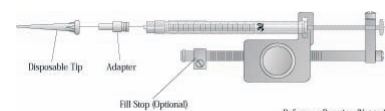
Description	Dispense Volume Range	0.2 to 50 µL
	Model	PB 600-1
1. Screw, 6-32 x 3/8		16204
2. Plunger Arm for 700/1700 Series Syringes		15144
Plunger Arm for 1001, 1001.25, and 1002 Syringes		15142
Plunger Arm for 1005 and 1010 Syringes		
3. Screw 6/32" x 5/16"		16203
4. Flange Screw PB 600-1		14704
Flange Screw for 1005 Syringe		
Flange Screw for 1010 Syringe		
5. O-ring, 0.364" x 0.070"		16102
O-ring, 0.489" x 0.070"		
O-ring, 0.676" x 0.070"		



Reference Drawing (Not to Scale)

Optional Accessories

Description	Volume	100 µL	1 mL
1. Disposable Tip		75700	75701
2. Luer Tip Adapter		31330	31331
3. Fill Stop		15125	15125



Reference Drawing (Not to Scale)

Special Syringes

SaltLine Syringes

250 µL - 10 mL

- For use with gases and liquids
- PE-tipped plungers for better durability when working with salty solutions up to 30 g/L
- Replaceable plungers



Ordering Information

		Volume	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL
		Model	1710	1725	1750	1001	1002	1005	1010
TLL-SAL Needle not included			205620	203220	203230	203240	203250	203260	203270
TLL-XL-SAL Needle not included				203500	203505	203510	203515	203520	203525
D-SAL Needle not included				203450	203460	203470		203480	
AD-SAL Needle not included			205615	203310	203320	203330	203340	203350	203360
DAD-SAL Needle not included				203400	203410	203420			
C-XP-SAL Needle not included				203530	203535	203540	203545	203550	



Syringe Calibration Service

Add the prefix "CAL" to the beginning of the syringe's part number.

PB600 Repeating Dispenser

Syringe not included



83700 83700 83700 83700

Operating Parameters

- Maximum temperature is 50° C.
- Maximum test pressure is 6 bar.

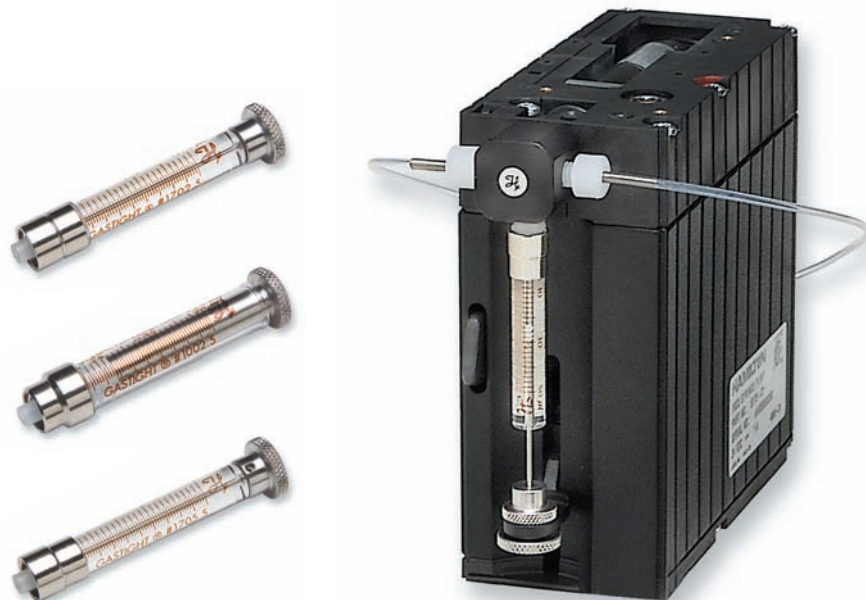
Replacement Parts

	Volume	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL
Description	Model	1710	1725	1750	1001	1002	1005	1010
Plunger Assembly TLL-SAL		205619	203222	203232	203242	203252	203262	203272
Plunger Assembly TLL-XL-SAL			203571	203572	203573	203574	203575	203576
Plunger Assembly D-SAL			203222	203232	203472		203262	
Plunger Assembly AD-SAL		205616	203312	203322	203332	203342	203262	203272
Plunger Assembly DAD-SAL			203402	203412	203332			
Plunger Assembly C-XP-SAL			203577	203578	203579	203580	203581	





Short Stroke Syringes

12.5 µL - 12.5 mL

- For use with "half-height" (4.5") precision syringe pump, PSD3
- Precision-machined PTFE-tipped plungers
- Available with TLL, and TLLX connectors



Ordering Information

	Volume	12.5 µL	25 µL	50 µL	125 µL	250 µL	500 µL	1.25 mL	2.5 mL	5 mL	12.5 mL
	Model	1702.5	1705.5	1710.5	1725.5	1750.5	1001.5	1002.5	1005.5	1010.5	1025.5
TLLX, TLL with stop Needle not included	 	5495-10	5495-15	5495-20	5495-25	5495-30	5495-35				
TLL, PTFE Luer Lock Needle not included	 							5495-40	5495-45	5495-50	5495-55

Operating Parameters

- Maximum temperature is 115° C.
- Maximum test pressure is 6 bar.

Life Science Syringes

Threaded Plunger Syringes

25 μL

- For applications requiring extremely precise plunger movement or minute fluid manipulation
- Dispense from 0.33 to 13.23 μL per plunger revolution
- Luer Tip (LT) syringe terminations for easy connection of Kel-F[®] hub stainless steel needles; Kel-F[®] hub PTFE tubing; and 6.4 mm O.D. x 3.2 mm I.D. Tygon[®] or rubber tubing



Operating Parameters

- Maximum temperature is 50[°] C.
- Maximum test pressure is 6 bar.

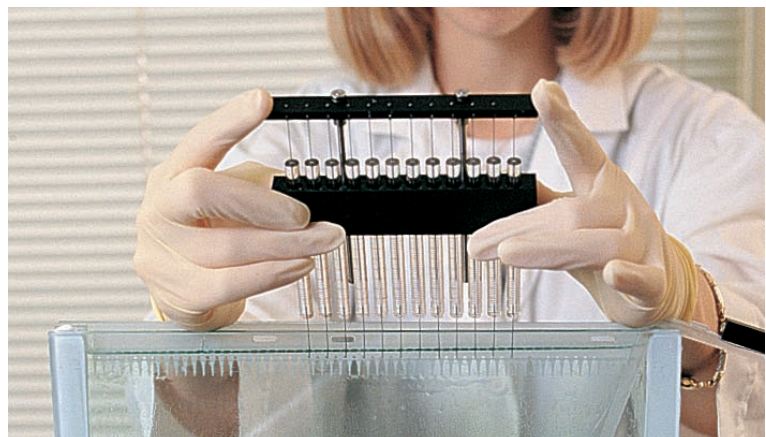
Ordering Information

Part Number	Model	Volume	Description	Volume per Rotation
80266	1702 TPLT	25 μL	Sleeve type	0.33 μL
81041	1710 TPLT	100 μL	Sleeve type	1.32 μL
81242	1750 TPLT	500 μL	Plunger type	5.29 μL
81341	1001 TPLT	1.0 mL	Plunger type	13.23 μL

Multi-Channel Gel Loading Syringes

10 μL

- Designed for multiplex DNA sequencing methodologies
- Rapidly transfer 4, 6, 8, or 12 samples to sequencing gels, MICROTITER[®] plates, or nylon membranes
- Accurately dispense from 0.2 to 10 μL of sample per syringe simultaneously
- 9 mm needle spacing and three needle diameters optimize sample transfers
- Adjustable volume stops allow faster, more accurate reloading and excellent reproducibility



Ordering Information

For best results, select the needle design which most closely matches your gel thickness

	Volume	10 µL	10 µL	10 µL
	Gauge	Special Sleeved	26.5s	27
	Use	For loading samples into or on 0.2 mm or thicker gel casting plates	For loading samples on 0.3 mm or thicker gel casting plates	For loading samples on 0.4 mm or thicker gel casting plates
8-Channel Gel Loading Syringe point style 3	(**/25/3)	84511	84503	84502
Single Channel DNA Syringe point style 3	(**/25/3)	80081	84505	84504

Replacement Parts

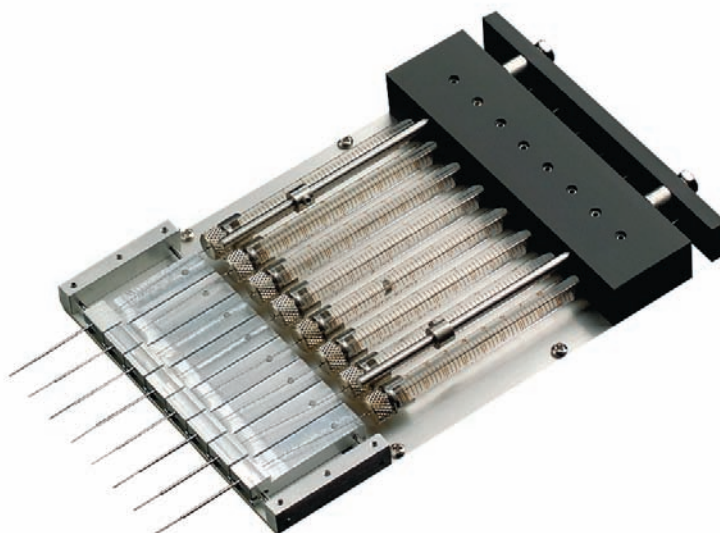
Description	Volume Gauge	10 µL Special	10 µL 26.5s	10 µL 27
1. Syringe(1/pk)		80023	80022	80021
2. Plunger Assembly(1/pk)		15948	15948	15948
3. Glass Barrel(1/pk)		10398	10396	10395
4. Stop Collar Kit ¹⁾		1993-01	1993-01	1993-01

1) Stop Collar Kit includes Stop Collars (2 each), Set Screws (2 each), and hex wrench (1 each)

Adjustable Gel Loading Syringes (AGLS)

10 µL

- Simplify and speed sample loading of 96-lane gels on ABI PRISM® 377 DNA sequencing instrument
- Rapidly transfer 8 samples at a time from a microwell plate with 9 mm spacing to 96-lane gel with 10.8 mm spacing
- Removable needles for complete interchangeability of needle designs, and clogged or damaged needles
- Accurately dispense from 0.2 to 10 µL



Operating Parameters

- Maximum temperature is 50° C.
- Maximum test pressure is 6 bar.

Ordering Information

For best results, select the needle design which most closely matches your gel thickness

	Volume	10 µL
	Gauge	Special Sleeved
	Use	For loading samples into or on 0.2 mm or thicker gel casting plates
8-Channel Gel Loading Syringe	(**/25/3)	84611

Replacement Parts

Description	Volume Gauge	10 µL Special
1. AGLS Needle (4/pk)		78633
2. Plunger Assembly (1/pk)		15948
3. Glass Barrel RN (1/pk) ¹⁾		10399
4. Stop Collar Kit ²⁾		1993-01

1) Needle not included

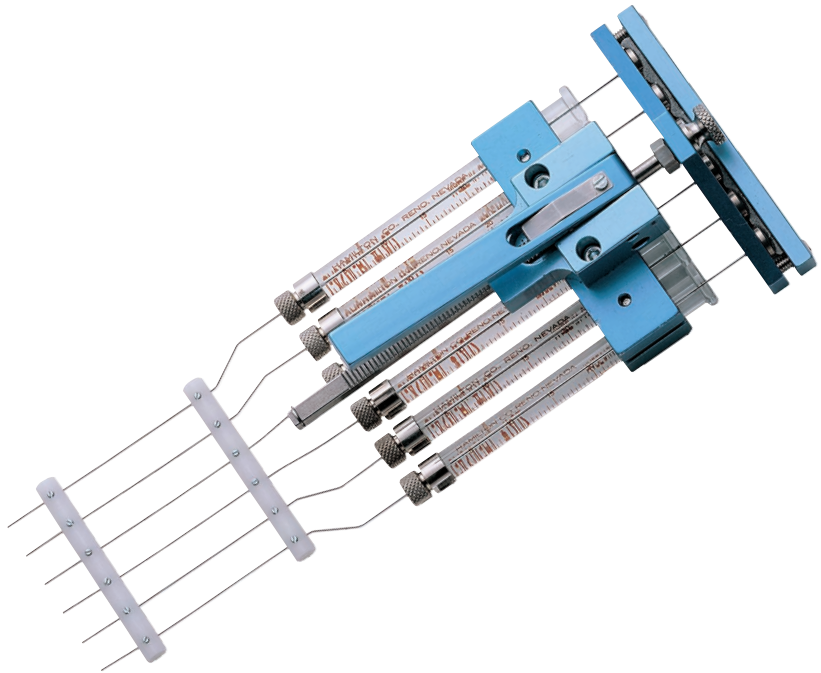
2) Stop Collar Kit includes Stop Collars (2 each), Set Screws (2 each), and hex wrench (1 each)

Life Science Syringes

HLA (Terasaki) Dispenser

25 µL - 500 µL

- Accurately dispense six samples simultaneously up to 50 times with the press of a lever
- Designed for rapid filling of 60 well HLA trays with 6.35 mm well spacing
- Removable needles (RN)
- Plunger assemblies and glass barrels are replaceable



Ordering Information

	Syringe Model	1702	1705	1710	1725	1750
	Volume	25 µL	50 µL	100 µL	250 µL	500 µL
Description	µL per Dispense	0.5 µL	1 µL	2 µL	5 µL	10 µL
HLA Dispenser Part Number		201900	201910	201920	201930	201940

Replacement Parts

	Model	1702	1705	1710	1725	1750
Description	Volume	25 µL	50 µL	100 µL	250 µL	500 µL
1. Plunger Assembly(1/pk)		1122-01	1162-01	1162-02	1162-03	1169-01
2. Glass Barrel(1/pk)		10372	10367	10368	10369	10370
3. Needles ¹⁾						

1) Needles can be replaced by Hamilton only. Please consult your local Hamilton dealer.

Syringe Cleaning Tips

- The life of your MICROLITER™, MODIFIED MICROLITER™ or GASTIGHT® syringe is directly related to its cleanliness!
- To clean syringes, it is best to use solvents know to be effective in solvating the sample and preferably are non-alkaline, non-phosphate and non-detergent based. A biodegradable, non-phosphate, organic Cleaning Concentrate is available from Hamilton; order part # 18311.
- High quality water and acetone prove to be good rinses.
- To clean the plunger, remove it from the syringe barrel and gently wipe with a lint-free tissue. Reinsert the plunger into the barrel and pump deionised water or acetone through the needle and syringe. Air dry the syringe for storage.

Note: When reinserting a PTFE-tipped plunger into a syringe barrel, wet (lubricate) the tip with deionised water or another solvent compatible with the sample.

Sterilizing Syringes

Sterilize your Hamilton syringe using an appropriate chemical sterilizer. Rinse the syringe thoroughly after sterilization. In general, Hamilton does not recommend autoclaving syringes. Stainless steel expands faster than glass upon heating. Heating a syringe with a cemented, stainless steel needle may cause the glass barrel to split. Heating a syringe with cemented stainless steel hubs may result in adhesive deterioration and leakage. It is the responsibility of the user to determine the suitability of application and material compatibility of the products based on published specifications.

Syringe Graduations

Syringe Graduations

100 line screens

7000 Series MODIFIED MICROLITER™ Syringes

	0.5 µL	1 µL	2 µL	5 µL
	7000.5	7001, 7101	7002, 7102	7105
Scale length, mm	60	60	60	60
Total scale divisions	100	100	100	100
Major graduations, µL	0.05	0.1	0.2	0.5
Minor graduations, µL	0.01	0.02	0.04	0.1
Sub-minor graduations, µL	0.005	0.01	0.02	0.05

600, 700, 800 & 900 Series MICROLITER™ Syringes

	2.5 µL	5 µL	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
	62	65	75, 85, 95	701, 801, 901	702, 802	705, 805	710, 810	725, 825	750
Scale length, mm	27	27	54	54	60	60	60	60	60
Total scale divisions	50	50	100	100	100	100	100	100	100
Major graduations, µL	0.5	1	0.5	1	2.5	5	10	25	50
Minor graduations, µL	0.1	0.2	0.1	0.2	0.5	1	2	5	10
Sub-minor graduations, µL	0.05	0.1	0.05	0.1	0.25	0.5	1	2.5	5

1700 & 1800 Series GASTIGHT® Syringes

	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL
	1701, 1801	1702, 1802	1705, 1805	1710, 1810	1725, 1825	1750
Scale length, mm	60	60	60	60	60	60
Total scale divisions	100	100	100	100	100	100
Major graduations, µL	1	2.5	5	10	25	50
Minor graduations, µL	0.2	0.5	1	2	5	10
Sub-minor graduations, µL	0.1	0.25	0.5	1	2.5	5

1000 Series GASTIGHT® Syringes

	1 mL	1.25 mL	2.5 mL	5 mL	10 mL	25 mL	50 mL	100 mL
	1001	1001.25	1002	1005	1010	1025	1050	1100
Scale length, mm	60	60	60	60	60	60	60	120
Total scale divisions	100	100	100	100	100	100	100	200
Major graduations, µL	0.1	0.125	0.25	0.5	1	2.5	5	5
Minor graduations, µL	0.02	0.025	0.05	0.1	0.2	0.5	1	1
Sub-minor graduations, µL	0.01	0.0125	0.025	0.05	0.1	0.25	0.5	0.5

Super Syringes

	500 mL	1000 mL	1500 mL	2000 mL
	S0500	S1000	S1500	S2000
Scale length, mm	65	66	99	131
Total scale divisions	25	50	75	100
Major graduations, µL	100	100	100	100
Minor graduations, µL	20	20	20	20

Syringe Rack

Safe Keeping for your HAMILTON Syringe

- Keep your workplace tidy
- Clean and safe storage
- Storage for 5 syringes of the series 700, 1700 or 7000
- Usable as free standing or wall model



- Safe storage of the syringes in a plastic holder.
- By means of a lip by the plastic holder the syringe is protected against accidental touching and falling down.
- The distance of the plastic holder prevents the syringes from getting in contact with the metal plate.



- A trough underneath prevents soiling of your workplace with liquids.
- Easy cleaning of the complete holder.



Ordering Information

Part Number

Description

204880

Syringe Rack

Syringe Accessories

MTB Sampling Valve

- Lever-actuated on/off valve for storing and transporting samples in any GASTIGHT® TLL syringe
- Kel-F® hub needles attach to the valve
- Pressure tested to 6 bar; autoclavable
- Bore I.D., 1 mm



Ordering Information

Part Number	Description
86580	MTB Sampling Valve

Septum Adapter

- Store and sample syringe contents through the Septum Adapter
- Attaches to any TLL syringe or luer lock fitting
- Replaceable septum

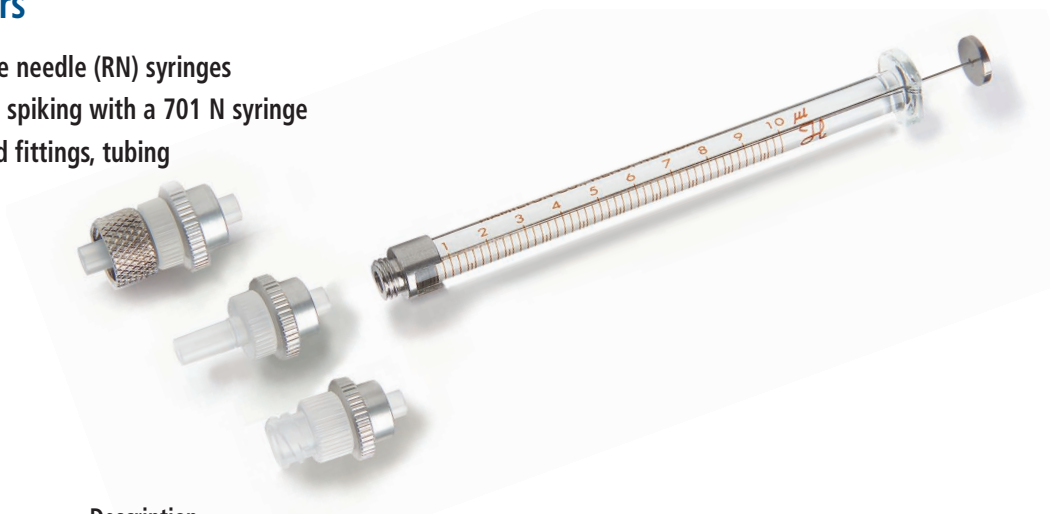


Ordering Information

Part Number	Description
31335	Septum Adapter (TLL), includes 12 septa
75810	Replacement Septa, 7 mm dia., 12/pk

Removable (RN) Adapters

- For 250 µL and larger removable needle (RN) syringes
- Port I.D. of 1 mm allows sample spiking with a 701 N syringe
- Provides connection to threaded fittings, tubing assemblies, tees and crosses



Ordering Information

Part Number	Description
35081	Female Luer/Removable Needle Hub (L)
35080	Male Luer/Removable Needle Hub (L)
35083	Male Luer Lock/Removable Needle Hub (L)

Syringe Accessories

Needle Cleaning Kit

- Contains a selection of various diameter tungsten wires for cleaning plugged needles
- Biodegradable cleaning concentrate helps to remove tenacious residues

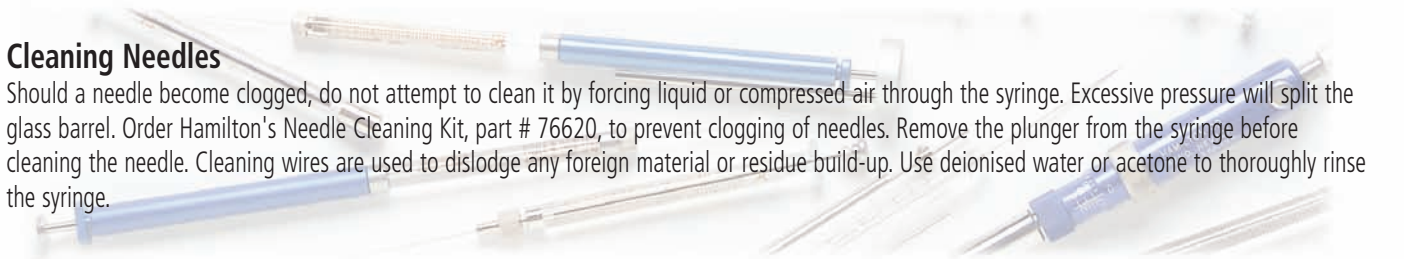


Ordering Information

Part Number	Description																					
76620	Needle Cleaning Kit (includes cleaning wires and 70 mL of cleaning concentrate listed below)																					
	<table border="1"> <thead> <tr> <th>Cleaning Wire Part #</th> <th>Cleaning Wires (178 mm in length)</th> <th>Use to Clean Needle Gauges</th> </tr> </thead> <tbody> <tr> <td>18306</td> <td>0.076 mm O.D., 10/pk</td> <td>23s, 26s, 31-33</td> </tr> <tr> <td>18300</td> <td>0.089 mm O.D., 10/pk</td> <td>26s, 31-33</td> </tr> <tr> <td>18301</td> <td>0.126 mm O.D., 10/pk</td> <td>22s, 25s, 28-30</td> </tr> <tr> <td>18302</td> <td>0.167 mm O.D., 10/pk</td> <td>27</td> </tr> <tr> <td>18303</td> <td>0.207 mm O.D., 10/pk</td> <td>24-26</td> </tr> <tr> <td>18304</td> <td>0.306 mm O.D., 10/pk</td> <td>22, 23 (and larger)</td> </tr> </tbody> </table>	Cleaning Wire Part #	Cleaning Wires (178 mm in length)	Use to Clean Needle Gauges	18306	0.076 mm O.D., 10/pk	23s, 26s, 31-33	18300	0.089 mm O.D., 10/pk	26s, 31-33	18301	0.126 mm O.D., 10/pk	22s, 25s, 28-30	18302	0.167 mm O.D., 10/pk	27	18303	0.207 mm O.D., 10/pk	24-26	18304	0.306 mm O.D., 10/pk	22, 23 (and larger)
Cleaning Wire Part #	Cleaning Wires (178 mm in length)	Use to Clean Needle Gauges																				
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18301	0.126 mm O.D., 10/pk	22s, 25s, 28-30																				
18302	0.167 mm O.D., 10/pk	27																				
18303	0.207 mm O.D., 10/pk	24-26																				
18304	0.306 mm O.D., 10/pk	22, 23 (and larger)																				
18311	Cleaning Concentrate, 500 mL (not included in cleaning kit)																					

Cleaning Needles

Should a needle become clogged, do not attempt to clean it by forcing liquid or compressed air through the syringe. Excessive pressure will split the glass barrel. Order Hamilton's Needle Cleaning Kit, part # 76620, to prevent clogging of needles. Remove the plunger from the syringe before cleaning the needle. Cleaning wires are used to dislodge any foreign material or residue build-up. Use deionised water or acetone to thoroughly rinse the syringe.

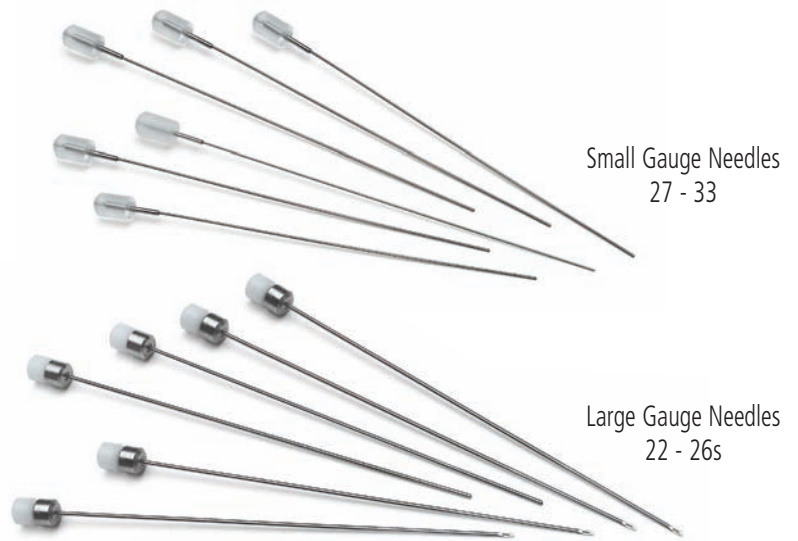


Needles

Removable Needles

(Needle Gauge Index on page 55)





- Convenient SIX PACKS
- For use with RN-style syringes and connectors
- 304 stainless steel (sst.) needle
- Standard needle length: 51 mm







Ordering Information

All needles sold in 6 packs.

For 2.5 - 100 µL Syringes

Gauge					Custom Needles ²⁾ Pt. Styles 2, 3, 4, AS
	Point Style 2	Point Style 3	Point Style 5	Custom Needles ¹⁾	
34					207434
33		7762-06			7803-05
32		7762-05			7803-04
31		7762-04			7803-03
30		7762-03			7803-07
28		7762-02			7803-02
27		7762-01			7803-01
23					207423
26s	7758-02	7768-01	7784-07	7731-02	7804-04
26	7758-04	7768-02	7784-08	7731-01	7804-03
22s	7758-03	7770-01	7784-05	7731-04	7804-02
22	7758-01	7770-02	7784-06	7731-03	7804-01
21					207421
20					207720
19					207419

For 250 µL - 10 mL Syringes

Gauge					Custom Needles ²⁾ Pt. Styles 2, 3, 4, AS
	Point Style 2	Point Style 3	Point Style 5	Custom Needles ¹⁾	
26s	7779-02	7780-01	7784-03	7732-04	7806-04
26	7779-04	7780-02	7784-04	7732-03	7806-03
22s	7779-03	7780-03	7784-01	7732-02	7806-02
22	7779-01	7780-04	7784-02	7732-01	7806-01
20					207720

1) Please specify length, and whether electro-tapered (Point style 5)

2) Please specify length, point style, and whether electro-tapered

PEEK RN and Kel-F® Hub Needles

- When contact with stainless steel must be avoided
- Standard 51 mm long needle, O.D. 1.52 mm, I.D. 0.76 mm

Ordering Information

Part Number	Description	Used with syringe
8650-01	Removable (RN) needle, 6/pk	250 µL - 10 mL RN syringes
8649-01	Kel-F® (KF) hub needle, 6/pk	All LT and TLL syringes

Needles

Hub Needles

(Needle Gauge Index on page 55)

- Metal hub (N) or Kel-F® hub (KF) needles in convenient SIX PACKS, SST tubing (no hub) in SINGLE PACKS
- Metal hub (nickel plated brass) for use with TLL syringes and LT or TLL connectors, Kel-F® hub for use with LT and TLL syringes and connectors
- 304 stainless steel (sst.) needle
- Standard needle length: 51 mm



Metal Hub Needles



Kel-F® Hub Needles

Ordering Information

All hub needles sold in 6 packs.



Metal Hub (N)

Gauge	SST ²⁾ Tubing No Hub	Point Style				Custom Needles ¹⁾	Custom Pt. Styles 2, 3, 4, AS
		Point Style 2	Point Style 3	Point Style 5	Custom Needles ¹⁾		
33	21033	90033	91033				7747-01
32	21032	90032					
31	21031	90031	91031				7748-17
30	21030	90030	91030				7748-16
29	21029	90029					
28	21028	90028	91028				7748-14
27	21027	90027	91027				7748-13
26s	21039	90039	91039	7729-01	7751-19		7748-19
26	21026	90026	91026	7729-03	7751-17		7748-12
25	21025	90025	91025	7729-04	7751-16		7748-11
24	21024	90024	91024	7729-05	7751-15		7748-10
23	21023	90023	91023	7729-06	7751-14		7748-09
22s	21038	90038	91038	7729-02	7751-18		7748-18
22	21022	90022	91022	7729-07	7751-13		7748-08
21	21021	90021	91021	7729-08	7751-12		7748-07
20	21020	90020	91020	7729-09	7751-11		7748-06
19	21019	90019					90319
18	21018	90018	91018	7729-10	7751-09		7748-04
17	21017	90017	91017	7729-11	7751-08		7748-03
16	21016	90016	91016	7729-12	7751-07		7748-02
15	21015	90015					90315
14	21014	90014	91014				7749-05
13	21013	90013	91013				7749-04
12	21012	90012	91012				7749-03
11	21011	90011	91011				7749-02
10	21010	90010	91010				7749-01



Kel-F® Hub (KF)

Point Style 2	Point Style 3	Point Style 5	Custom Needles ¹⁾	Custom Pt. Styles 2, 3, 4, AS
90131	90531			7750-22
90130	90530			7750-21
90129				
90128	90528			7750-19
90127	90532			7750-18
90139	90539	7746-12	7752-19	7750-24
90126	90533	7746-10	7752-17	7750-17
90125	90525	7746-09	7752-16	7750-16
90124	90524	7746-08	7752-15	7750-15
90123	90523	7746-07	7752-14	7750-14
90138	90534	7746-11	7752-18	7750-23
90122	90134	7746-06	7752-13	7750-13
90121	90521	7746-05	7752-12	7750-12
90120	90520	7746-04	7752-11	7750-11
90119				90369
90118	90535	7746-03	7752-09	7750-09
90117	90517	7746-02	7752-08	7750-08
90116	90516	7746-01	7752-07	7750-07
90115				
90114			7752-05	7750-05
90113			7752-04	7750-04
90112			7752-03	7750-03
90111			7752-02	7750-02
90110			7752-01	7750-01

1) Please specify length, and whether electro-tapered (Point style 5)

2) Please specify length, point style, and whether electro-tapered

Needle Gauge Index




Gauge	I.D. [mm]	I.D. Tolerance [mm]	O.D. [mm]	O.D. Tolerance [mm]	Wall Thickness [mm]	Volume [μ L/cm]
34	0.06	0.02	0.16	0.01	0.05	0.03
33	0.11	0.02	0.21	0.01	0.05	0.10
32	0.11	0.02	0.24	0.01	0.07	0.10
31	0.13	0.02	0.26	0.01	0.07	0.13
30	0.16	0.02	0.31	0.01	0.08	0.20
29	0.18	0.02	0.34	0.01	0.08	0.25
28	0.18	0.02	0.36	0.01	0.09	0.25
27	0.21	0.02	0.41	0.01	0.10	0.35
26s	0.13	0.015	0.47	0.01	0.17	0.13
26	0.26	0.02	0.46	0.01	0.10	0.53
25s	0.15	0.015	0.52	0.01	0.19	0.18
25	0.26	0.02	0.52	0.01	0.13	0.53
24	0.31	0.02	0.57	0.01	0.13	0.75
23s	0.09	0.02	0.64	0.03	0.28	0.06
23	0.34	0.02	0.64	0.01	0.15	0.91
22s	0.15	0.015	0.72	0.01	0.29	0.18
22	0.41	0.02	0.72	0.01	0.16	1.32
21	0.51	0.02	0.83	0.01	0.16	2.04
20	0.60	0.02	0.91	0.01	0.16	2.83
19	0.69	0.04	1.07	0.015	0.19	3.74
18	0.84	0.04	1.27	0.015	0.22	5.54
17	1.07	0.04	1.47	0.015	0.20	8.99
16	1.19	0.04	1.65	0.015	0.23	11.12
15	1.37	0.04	1.83	0.015	0.23	14.74
14	1.60	0.05	2.11	0.025	0.26	20.11
13	1.80	0.05	2.41	0.025	0.31	25.45
12	2.16	0.05	2.77	0.025	0.31	36.64
11	2.39	0.05	3.05	0.025	0.33	44.86
10	2.69	0.05	3.40	0.025	0.36	56.83

Tubing Assemblies

- For use with LT or TLL Hamilton syringes and connectors
- PTFE tubing with Kel-F® (PCTFE) hub on one end or both ends when specified
- Standard 30 cm length
- Also available: Stainless steel tubing (see page 54)



Ordering Information

Gauge	I.D. [mm]	O.D. [mm]	Tubing Only ¹⁾			
				1 Hub, 30 cm	1 Hub ¹⁾	2 Hub ²⁾
30	0.30	0.76	20930	90630	90680	86510
28	0.38	0.84	20928	90628	90678	86510
26	0.46	0.91	20926	90626	90676	86510
24	0.56	1.02	20924	90624	90674	86510
22	0.71	1.17	20922	90622	90672	86510
20	0.86	1.47	20920	90620	90670	86510
19	0.97	1.57	20919	90619	90669	86510
18	1.07	1.68	20918	90618	90668	86510
18	1.07	1.68	20942 ³⁾			
17	1.19	1.80	20917	90617	90667	86510
16	1.35	1.96	20916	90616	90666	86510
15	1.50	2.11	20915	90615	90665	86510
14	1.68	2.29	20914	90614	90664	86510
13	1.93	2.54	20913	90613	90663	86510
12	2.16	2.77	20912	90612	90662	86510
12	2.16	2.77	20943 ³⁾			
11	2.41	3.02	20911	90611	90661	86510
10	2.69	3.30	20910	90610	90660	86510
9	3.00	3.76	20909	90609	90659	86510
8	3.38	4.14	20908	90608	90658	86510
7	3.76	4.52	20907	90607	90657	86510
1/8"	3.18	3.94	20941	90641	90691	86510

1) Specify length

2) Specify length and gauge

3) Tubing made from FEP (Fluorinated Ethylene Propylene)

Operating Parameters

- Kel-F® and FEP hub maximum temperature is 200° C
- PTFE Tubing maximum temperature is 260° C

Valves and Fittings

Hamilton (HV) Plug Valves

- Wetted paths are chemically inert PTFE and Kel-F® materials
- Valves are for stand alone use or HVX and HVP valves can also be panel mounted
- Valve position is controlled manually via a handle attached to the valve stem
- Valve connections are via 1/4"-28 UNF-2B (Unified Fine) fittings

Hamilton HV Plug Valves provide an economical and flexible method of custom-building a fluid flow control system, for a simple on/off valve to a more complex multi-valve arrangement, using a combination of loop and distribution valves. The small valve body with its chemically inert flow path is ideally suited for low pressure applications. All HV Plug Valves allow you to select and interchange a wide variety of fittings, adapters and tubing, including male and female luers, FEP tubing assemblies, and adapters which thread directly into the valve providing an endless variety of valve configurations for any flow applications. Hamilton (HV) fittings and adapters are installed finger-tight and provide a leak-tight seal tested to 6 bar.



HV Valve

The HV valve is physically the smallest valve and constitutes a basic unit for the control of fluids. It is ideal for low pressure applications; for a basic on/off flow to a four-way distribution system.



HVP Valve

The HVP valve is essentially the same as the HV valve except the HVP can be mounted into panels allowing for custom installation into control panels or instruments.

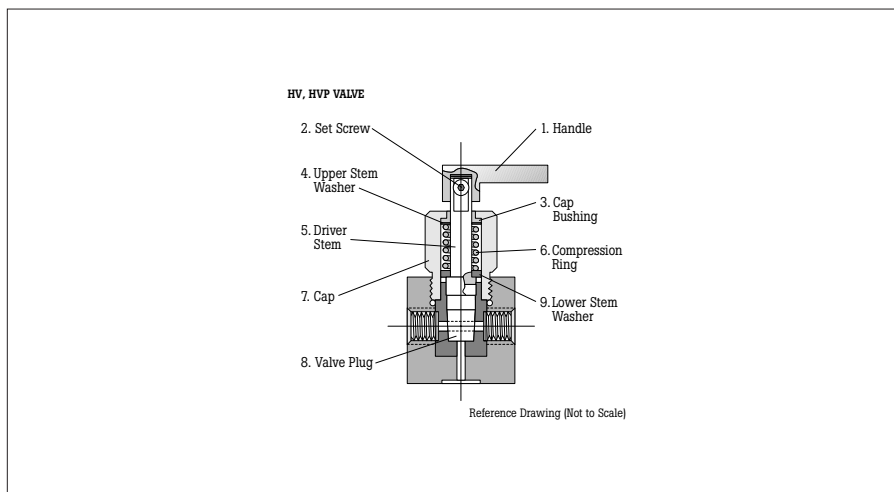


HVX Valve

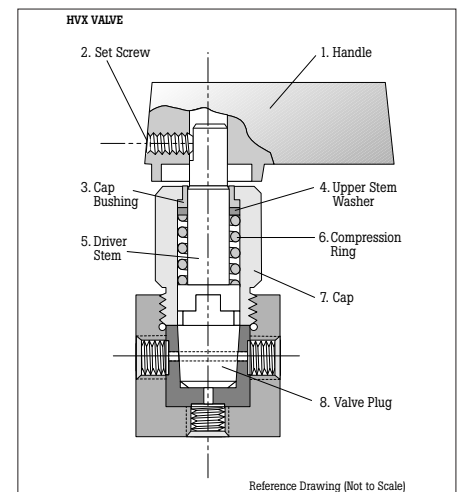
The HVX valve is physically the largest valve. A larger port internal diameter allows increased fluid flows even with moderately viscous fluids. HVX valves can be used free standing or panel-mounted using an optional locking nut, **Part # 35121**. 6- and 8-port distribution and loop valves are available only in the HVX body style.

HV Valve Dimensions and Specifications

The following dimensions and specifications should help to plan a flow control system. All dimensions are in mm. The mentioned valve parts are not spare parts and cannot be ordered separately.

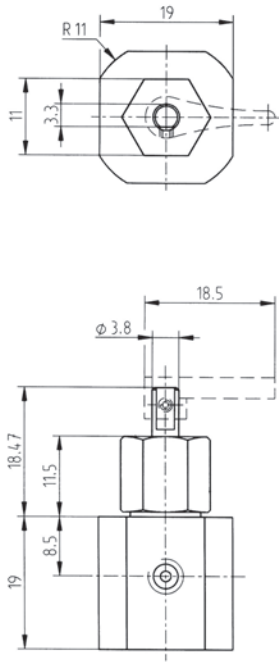


HV, HVP

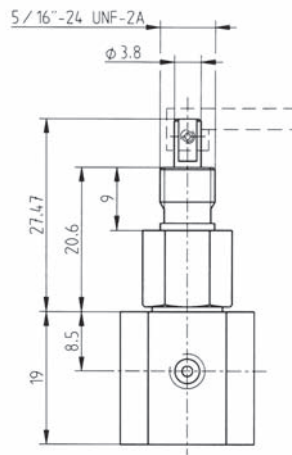


HVX

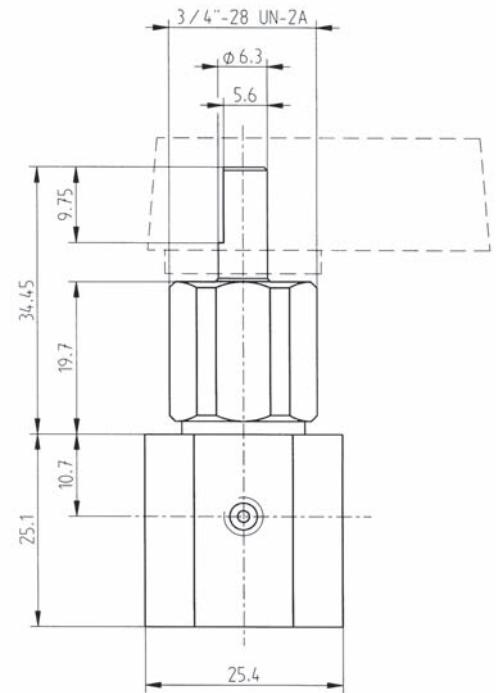
Valves and Fittings



HV



HVP



HVX

	HV	HVP	HVX
Temperature Range [°C]	10 - 100	10 - 100	10 - 100
Weight [g]	25	25	25
Maximum Pressure Rating [MPa]	0.6	0.6	0.6
Valve Connection Ports	1/4-28	1/4-28	1/4-28
Break Away Torque [mNm]	106	106	424
Maximum Panel Thickness [mm]	N/A	3.8	15.9
Panel Hole Diameter [mm]	N/A	11.1	19.1
1. Handle	Nickel	Nickel	Black Nylon
2. Set Screw	Stainless Steel	Stainless Steel	Stainless Steel
3. Cap Bushing	Nylon	Nylon	PTFE
4. Upper Stem Washer	Stainless Steel	Stainless Steel	Stainless Steel
5. Drive Stem	Stainless Steel	Stainless Steel	Stainless Steel
6. Compression Spring	Zinc Plated Wire	Zinc Plated Wire	Stainless Steel
7. Cap	Aluminium	Aluminium	Aluminium
8. Valve Plug	PTFE ¹⁾	PTFE ¹⁾	PTFE ¹⁾
O-Ring	Buna-N	Buna-N	Viton
Valve Plug Seat	PCTFE ²⁾	PCTFE ²⁾	PCTFE ²⁾
Valve Housing	Aluminium	Aluminium	Aluminium
Lower Stem Washer	Stainless Steel	Stainless Steel	

1) PTFE (Polytetrafluoroethylene)

2) PCTFE (Polychlorotrifluoroethylene)

Ordering Information



Flow Diagram	Valve Description	Valve Model	HV	HVP	HVX
	180° Flow Path 2-ports	1-1	86725	86775	86901 ¹⁾
	90° Flow Path 2-ports	2-2	86726	86776	86902 ¹⁾
	"T" Flow Path 3-ports	3-3	86727	86777	86903 ¹⁾
	90° Flow Path 3-ports	3-2	86728	86778	86904 ¹⁾
	Loop Flow Path 4-ports	4-4	86729	86779	86905 ¹⁾
	"T" Flow Path 4-ports	4-3	86730	86780	86906 ¹⁾
	90° Flow Path 4-ports	4-2	86731	86781	86907 ¹⁾
	180° Flow Path 4-ports	4-1	86732	86782	86908 ¹⁾
	Distribution Flow Path 2-ports	1-5	86735	86785	86910 ¹⁾
	Distribution Flow Path 2-ports	2-5	86736	86786	86911 ¹⁾
	Distribution Flow Path 3-ports	3-5	86737	86787	86912 ¹⁾
	Distribution Flow Path 4-ports	4-5	86738	86788	86913 ¹⁾
	Distribution Flow Path 6-ports	6-5			86915
	Loop Flow Path 6-ports	6-6			86916 ²⁾
	Distribution Flow Path 8-ports	8-5			86918
	Loop Flow Path 8-ports	8-7			86919 ²⁾

Note: All valves have 1.5 mm diameter ports unless otherwise specified.

1) Valve has 3 mm diameter ports.

2) Valve has 1 mm diameter ports.



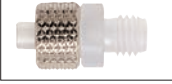

Valves and Fittings

HV Fittings, Adapters and Tubing



- Use with Hamilton valves
- Use tubing assemblies to connect tubing to valves (6 bar or less)
- Use female luer, male luer, luer lock and barbed fittings to connect syringes, equipment, or other devices to Hamilton valves
- Fittings and adapters are Kel-F® (PCTFE) unless otherwise noted

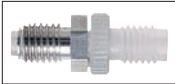






Ordering Information

HV, HVP			
Description	Port Diameter [mm]	Pack	Part #
Female Luer / 1/4"-28 UNF	1.5	1/pk	35031
			
Male Luer / 1/4"-28 UNF	1.5	1/pk	35030
			
Male Luer Lock / 1/4"-28 UNF	1.5	1/pk	35033
			
1/8" Barb / 1/4"-28 UNF	1.5	1/pk	35032
			

HVX		
Port Diameter [mm]	Pack	Part #
3.0	1/pk	35071
3.0	1/pk	35070
3.0	1/pk	35073
3.0	1/pk	35072

Description	Gauge	I.D. [mm]	Pack	Part #
Plug / 1/4"-28 UNF			10/pk	88802
				
Union / 1/4"-28 UNF		1.5	1/pk 10/pk	32800 88800
				

Description	Gauge	I.D. [mm]	Pack	Part #
Swivel Union / 1/4"-28 UNF 		1.5	1/pk	35037
Bushing for "RN" type Needles / 1/4"-28 UNF 		1.0	1/pk	35035
One 1/4"-28 UNF Hub Assembled with 600 mm FEP Tubing 	12	2.0	1/pk	88988
	18	1.0	1/pk	88987
	22	0.7	1/pk	88986 ¹⁾
Two 1/4"-28 UNF Hubs Assembled with 300 mm FEP Tubing 	12	2.0	1/pk	88918
	18	1.0	1/pk	88917
	22	0.7	1/pk	88916 ¹⁾
Fittings with washer 		M6x1 for 2 x 1 mm tubing	5/pk	249980
		M6x1 for 2.9 x 2 mm tubing	5/pk	249981
		M6x1 for Gauge 20/22		249982
		M6x1 for Gauge 24		249983
		M6x1 for 2.5 x 1.5 mm tubing		249984
		1/4"-28 UNF for 2.9 x 2 mm tubing		249985
		1/4"-28 UNF for 2.5 x 1.5 mm tubing		249986
		1/4"-28 UNF for Gauge 20/22		249987
		1/4"-28 UNF for Gauge 24		249988
	1/4"-28 UNF for 2 x 1 mm tubing		249989	



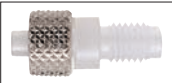




1) PTFE (Polytetrafluoroethylene)








Valves and Fittings

General Laboratory Fittings, Adapters and Tubing (Industry Standard)

- Use for assembly of low pressure (6 bar) fluid systems (not recommended for direct connection to Hamilton valves)
- Fittings and adapters are Kel-F® (PCTFE) unless otherwise noted

Ordering Information

Description	I.D. [mm]	Pack	Part #
Female Luer / 1/4"-28 UNF	1.5	1/pk	32834
Female Luer / M6x1	1.5	1/pk	32874
Female Luer / M6x1	2.0	1/pk	230223
Female Luer / M6x1 inner thread	1.5	1/pk	230225
			
Male Luer / 1/4"-28 UNF	1.5	1/pk	32835
Male Luer / M6x1	2.0	1/pk	230222
Male Luer / M6x1	3.0	1/pk	35074
Male Luer / M6x1 inner thread	1.5	1/pk	230227
			
Male Luer Lock / 1/4"-28 UNF	1.5	1/pk	32836
Male Luer Lock / M6x1	1.5	1/pk	32876
			
Female Luer / Female Luer Connector	1.5	1/pk	86505
			
Male Luer / Male Luer	1.5	1/pk	86506
			
Female Luer / Male Luer	1.5	1/pk	86507
			
Male Luer Lock / Male Luer Lock	1.5	1/pk	86511
			

Description	I.D. [mm]	Pack	Part #
Male Luer Lock / Male Luer 	1.5	1/pk	86512
Male Luer Lock / Female Luer 	1.5	1/pk	86513
3 Way "T" Male Luer 	1.5	1/pk	86516
4 Way "X" Male Luer 	1.5	1/pk	86518
3 Way "T" Threaded Junction			
1/4"-28 UNF inner thread	0.8	1/pk	32809
1/4"-28 UNF inner thread	1.6	1/pk	32810
M6x1 inner thread	1.6	1/pk	32860
			
4 Way "X" Threaded Junction			
1/4"-28 UNF inner thread	0.8	1/pk	32811
1/4"-28 UNF inner thread	1.6	1/pk	32812
M6x1 inner thread	0.8	1/pk	32861
			
3 Way "Y" Threaded Junction			
1/4"-28 UNF inner thread	0.8	1/pk	32813
1/4"-28 UNF inner thread	1.6	1/pk	32814
M6x1 inner thread	1.6	1/pk	32864
			

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General Ordering Information



HAMILTON
THE MEASURE OF EXCELLENCE™

Office Hours:

Weekdays 7.30 am - 5.00 pm Swiss time

Telephone: +41 (0)81 660 60 60

Fax: +41 (0)81 660 60 70

Ordering:

For your convenience, please have your client number and your purchase order number ready when placing an order. In-stock items, can be shipped the next day.

Order Via Email:

opd@hamilton.ch

Terms:

After credit responsibility has been established with Hamilton Bonaduz AG, terms are net 30 days from the date of invoice. A finance charge will be applied to all invoices not paid within 30 days. Unestablished accounts require payment in advance.

Shipping:

All domestic shipments are ex works Bonaduz by Post unless otherwise specified. All international shipments are ex works Bonaduz, Switzerland, to be shipped as specified by purchaser.

Warranty:

All products mentioned in this catalogue are guaranteed to be free of defects in material and workmanship at the time of delivery only.

**Returned Goods/
Restocking Charges:**

Any product returned to Hamilton Bonaduz AG for repair, evaluation, or exchange must be accompanied by an assigned Returned Goods Authorization (RGA) tracking number. Unauthorized returned will be refused.

Products returned for credit must also have an assigned RGA tracking number, and are subject to a 20 % restocking fee. All returns must be sent to the following address:

Hamilton Bonaduz AG
Via Crusch 8
7402 Bonaduz
Switzerland

Internet:

www.hamiltoncompany.com

Standard Conditions of Sales

1 Introduction and scope of validity

- 1.1 The following provisions comprise a *Capsule Version of the General Terms of Sale (GTS)*, Edition July 1999 of Hamilton Bonaduz AG, as agreed on with the customer in the year 1999.
- 1.2 The legal relationship between Hamilton and the customer is regulated by this capsule version and *comprehensively* by aforementioned *complete GTS*. Deviating provisions shall only be valid if expressly agreed on in writing.
- 1.3 Should the customer no longer have a copy of the GTS Hamilton will supply them on request at any time.

2 Hamilton price lists, offers and prices

- 2.1 Our price lists are purely invitations to submit offers; their validity is *limited* in time as set out in the price lists.
- 2.2 The validity of our offers is *limited* to 60 days as of offer date and in any case by scope of validity of the relevant lists.
- 2.3 The *relevant* price is the one applicable on the day the order is registered.
- 2.4 The costs for taxes, charges and duties of all kinds shall be borne by the customer.

3 Terms of payment, default and collection

- 3.1 Invoices are *payable* within 30 days as of invoice date, no deductions allowed.
- 3.2 The customer is in *default* upon expiry of the payment deadline specified above. Default interest of 6% is due as of this date. In addition, any collection costs Hamilton may incur shall be refunded, and Hamilton is entitled to further rights.

4 Delivery times and partial deliveries

- 4.1 The delivery times we specified are merely target times and *not* binding promises.
- 4.2 *Partial deliveries* are permissible; they will be invoiced as executed.

5 Transport, assumption of risk, liability and compliance with control regulations

- 5.1 The customer is responsible for *transport*, *transport* documents and *insurance*. Hamilton will organise these matters at customer's request. The corresponding costs shall in any case be borne by the customer.
- 5.2 *Risk* in respect of loss, destructions and damage as well as *liability* for the products shall be borne by the customer as soon as they have been set aside for transport/dispatch.
- 5.3 In all cases, and insofar as not bindingly prescribed by the applicable law, the customer shall be solely responsible for compliance with all export, import, transit and *control regulations* and *formalities*.

6 Inspection and notification of defect

- 6.1 The *customer* shall *inspect* the products (quality and quantity) at his own expense.
- 6.2 The customer shall notify us of *apparent* defects immediately after receipt of the products and of *hidden* defects immediately after discovery, in writing and with a detailed description.
- 6.3 Should the customer fail to provide due and proper notification of defect, the product shall be deemed *approved* without reservation.

7 Guarantee (warranty) and liability

- 7.1 Hamilton *guarantees* that its products are free of material and manufacturing defects.

- 7.2 Our guarantee commences on the day of dispatch for the *guarantee period* agreed on the individual contract, or if no such guarantee period has been specified for a period of 12 months for appliances and 3 months for all other products, insofar as no special provisions apply.
- 7.3 *Special provisions* apply for:
 - a) *consumables and utensils* such as syringes, hoses, valves, sensors etc.;
 - b) *pH, redox and reference electrodes*, for *oxygen sensors* and their accessories as well as for *conductivity cells*;
 - c) *buffers, electrolytes and reagents*.
- 7.4 Our guarantee is limited, *at our discretion*, to repair or replacement of the defective products or components, or to refund of the material value of the products or components that were not replaced.
- 7.5 In certain circumstances the customer will *lose* his claims.
- 7.6 In asserting guarantee claims the customer shall follow the *terms and directives* issued by Hamilton.
- 7.7 Any further warranty or liability of any nature for any kind of damage (i.e. *direct and indirect*) is – insofar as legally permissible – *excluded*.

8 Miscellaneous provisions

- 8.1 Under certain conditions Hamilton will accept the return of products that were *erroneously ordered by the customer*, and will refund 80% of the price invoiced for the products.
- 8.2 All intellectual property rights and the belonging rights of use remain with *Hamilton*.
- 8.3 The customer shall apply strict *confidentiality* to all the details of his business relationship with Hamilton as well as to Hamilton's business secrets. The customer shall impose this obligation also on his company executives, board members and employees as well as on any third parties he may lawfully consult.
- 8.4 Hamilton remains the *owner* of all products sold until the full purchase price has been received. If an invoiced amount is due but not fully paid, Hamilton shall be entitled to demand the return of all products supplied on this invoice, or to collect such products, whereby the customer shall not hold any claims whatsoever.
- 8.5 Bonaduz, Switzerland, is *place of performance* for all obligations of the parties.
- 8.6 The customer shall not set off his own claims on Hamilton against Hamilton's claims on the customer. Moreover, the customer shall *not* assign his claims against Hamilton to third parties.
- 8.7 *Communications* shall be addressed to Hamilton Bonaduz AG, Via Crusch 8, CH-7402 Bonaduz, Switzerland.
- 8.8 **All legal relationship between Hamilton and the customer are subject to Swiss law, to the exclusion of the Vienna Convention on International Sales.**

The ordinary courts at the domicile of Hamilton shall exclusively be competent for the settlement any disputes between the customer and Hamilton. Hamilton shall, however, be entitled to initiate legal action against the customer at any other competent court.



HAMILTON
THE MEASURE OF EXCELLENCE™

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MICROLITER™
MODIFIED MICROLITER™
ACCUDIL®
SampleLock™
MICROLAB®

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WISP™ - WATERS Corporation

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Miniature Valves
Modular Valve Positioner
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