

# AUTOMATED LIQUID HANDLING



## Instrument Syringes



**HAMILTON**   
THE MEASURE OF EXCELLENCE™

# The Measure of Excellence

## Automated Instrument Syringes

When it comes to precision fluid handling, rely on the leader. We've designed the world's most precise and reliable fluid handling and measuring systems for nearly 50 years. The standard GASTIGHT® 1000 and 1700 series syringes have been adapted for use on fluid handling systems.

Hamilton offers everything that is required of an instrument syringe: chemical inertness, long life, reduced friction and the well-known Hamilton precision and accuracy. Glass and TEFLON® construction provides an inert flow path for the most demanding applications. Interference fit between the TEFLON® PTFE plunger tip and the inner diameter of the glass barrel achieve the seal required for accurate operation.

## Long Life Syringes

The Hamilton Salt Line Syringes are a further development of the GASTIGHT 1000 and 1700 series syringes. They have a longer plunger tip life expectancy for demanding automated dispensing applications. They have an extremely long lifetime when used with aqueous solutions in the pH range of 1 – 13 that crystallize and scratch traditional TEFLON® plunger tips.

The plunger tip is made of durable ultra-high molecular weight polyethylene (UHMWPE) – a harder material than TEFLON® PTFE. They are designed to be compatible with our MICROLAB® 500 Series diluters and dispensers, the MICROLAB robotic sample processors, and OEM instrumentation including the PSD2, Precision Syringe Drive Module.

## Instrument Syringe Terminations

Instrument syringe terminations vary depending upon their application and complementary female fitting. These syringes are used with Hamilton instrumentation, i.e. diluters/dispensers, and for OEM applications.



### **AD, ACCUDIL™**

M8 x 0.75, male fitting; not autoclavable.  
Used with MICROLAB® 1000 PLUS diluter/dispenser.



### **C, Chem**

1/4-28 UNF male fitting; autoclavable.  
Used in low volume applications where system dead volumes need to be minimized.



### **D, Diluter**

TLL, TEFLON® Luer Lock, male fitting with M6 x 1 female, side port; autoclavable.  
Used with MICROLAB 500 Series diluters.



### **DAD, Diluter ACCUDIL**

M8 x 0.75 male fitting with M6 x 1 side port; not autoclavable.  
Used with MICROLAB 1000 PLUS diluter.



### **TLL/TLLX, TEFLON® Luer Lock (with or without slots)**

Male luer taper with nickel-plated brass hub accepts and locks in place luer hub needles and connectors; autoclavable when disassembled.  
Used with MICROLAB 500 Series diluters/dispensers and OEM instrumentation.

## Instrument Syringe Plungers

Plunger stops are recommended on syringes from 10 µL to 1 mL which are used on automated syringe drives or pumps. They serve a triple purpose: 1) prevent damage of the syringe by a run-away syringe drive or pump 2) allow accurate attachment of the syringe to the drive arm mechanism 3) optimize zero stop adjustment.



### **AD w/s, ACCUDIL with stop • DAD w/s, Diluter ACCUDIL with stop**

The w/s-style plunger stop allows attachment to collet type, drive mechanisms, such as on the MICROLAB 1000 PLUS diluter/dispenser.



### **CX, Chem w/s • DX, Diluter w/s • TLLX, TEFLON® Luer Lock w/s**

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.



### **TLLX, TEFLON® Luer Lock with stop & TLL, TEFLON® Luer Lock**

This X-style plunger stop is designed specifically for the PSD3 (half-height syringe pump).



### **XP-3000 style plunger**

This plunger is specifically designed to fit on the XP-3000 modular digital syringe pump.



### **XL-3000 style plunger**

This plunger is specifically designed to fit on the XL-3000 modular digital syringe pump.

# Syringes for the MICROLAB<sup>®</sup> 500 Series











10  $\mu$ L - 25 mL

MICROLAB 500 Diluters; ML503A, ML530B, ML532BP, ML531C

MICROLAB 500 Dispensers; ML501A, ML510B, ML512BP, ML511C



## Ordering Information

	Volume	10 $\mu$ L	25 $\mu$ L	50 $\mu$ L	100 $\mu$ L	250 $\mu$ L	500 $\mu$ L	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1701	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025	
<b>CX, CHEM* with stop</b>												
 	80062	80262	80962	81062	81162	81262						
* Requires a special valve with 1/4" - 28 threaded parts, PN 35788.												
<b>DX, Diluter with stop (Sample Syringe)</b>												
 		80226	80926	81026	81126	81226	81326					
<b>TLLX, TLL with stop (Reagent Syringe)</b>												
 		80222	80922	81022	81122	81222	81323					
<b>TLL, TEFLON® Luer Lock (Reagent Syringe)</b>												
 								81320	81420	81520	81620	82521
<b>Salt Line Syringes TLL-SAL, TEFLON® Luer Lock</b>												
 					203220	203230	203240	203250	203260	203270		

## Replacement Parts

	Volume	10 $\mu$ L	25 $\mu$ L	50 $\mu$ L	100 $\mu$ L	250 $\mu$ L	500 $\mu$ L	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1701	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025	
Plunger Assembly TLLX/DX/CX		13269	1117-01	1117-02	1117-03	1120-01	1578-01					
Plunger Assembly TLL							1359-01	1360-01	13230	13231	13271	
Plunger Assembly TLL-SAL					203222	203232	203242	203252	203262	203272		

### Note:

- All TLL and TLLX syringes can be used on the left or right side of ML500 Series diluters and dispensers.
- All DX syringes are used only on the right side of ML500 Series diluters, i.e., ML503A, ML530B, ML532BP and ML531C.

# Syringes for Hamilton Precision Syringe Pumps

25  $\mu$ L - 25 mL  
"Full-height" (9") precision syringe pump, PSD2



12.5  $\mu$ L - 12.5 mL  
"Half-height" (4.5") precision syringe pump, PSD3



## Ordering Information

Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1701	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025

### TLL, TEFLON® Luer Lock



81320 81420 81520 81620 82521\*

### TLLX, TLL with stop



80222 80922 81022 81122 81222 81323

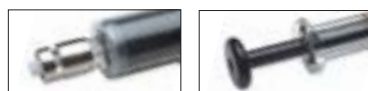
### TLLXB, TLL with stop & backbushing



80947 81047 81147 81247

### Salt Line Syringes

#### TLL-SAL, TEFLON® Luer Lock



203220 203230 203240 203250 203260 203270

\* For special applications only

## Replacement Parts

Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1701	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025

Plunger Assembly TLLX 13269 1117-01 1117-02 1117-03 1120-01 1578-01

Plunger Assembly TLL 1359-01 1360-01 13230 13231 13271

Plunger Assembly TLL-SAL 203222 203232 203242 203252 203262 203272

## 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



5495-10 5495-15 5495-20 5495-25 5495-30 5495-35

### TLL, TEFLON® Luer Lock



5495-40 5495-45 5495-50 5495-55

### Syringe Cleaning Tips

- The life of your GASTIGHT® syringe is directly related to its cleanliness!
- To clean syringes, it is best to use solvents known 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 deionized water or acetone through the needle and syringe. Air dry the syringe for storage.

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

# Syringes for OEM Applications

50  $\mu$ L - 10 mL  
XL-3000 modular digital syringe pump





50  $\mu$ L - 5 mL  
XP-3000 modular digital syringe pump







## Ordering Information

	Volume	50 $\mu$ L	100 $\mu$ L	250 $\mu$ L	500 $\mu$ L	1 mL	2.5 mL	5 mL	10 mL
	Model	1705TLL-XL	1710TLL-XL	1725TLL-XL	1750TLL-XL	1001TLL-XL	1002TLL-XL	1005TLL-XL	1010TLL-XL
<b>60 mm TLL, TEFLON® Luer Lock</b>									
		201790	201797	201802	201807	201812	201817	201822	201827

Both the 60 mm TLL-style and the 30 mm C-style syringes are compatible with many liquid handling instruments, including Tecan, Rosys, Cavro IQ Series sample processors and OEM liquid handling applications.

## Ordering Information

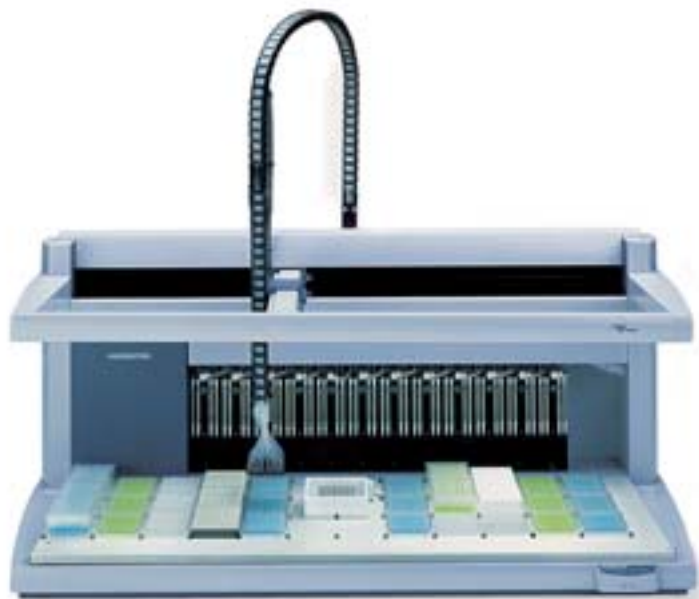
	Volume	50 $\mu$ L	100 $\mu$ L	250 $\mu$ L	500 $\mu$ L	1 mL	2.5 mL	5 mL
	Model	1705C-XP	1710C-XP	1725C-XP	1750C-XP	1001C-XP	1002C-XP	1005C-XP
<b>30 mm C, CHEM</b>								
		201720	201730	201740	201750	201760	201770	201780

### Sterilizing Syringes

Sterilize your Hamilton syringe using an appropriate chemical sterilizer. Rinse the syringe thoroughly after sterilization. In general, Hamilton Company 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.

# Syringes for the MICROLAB<sup>®</sup>4000 Instruments

50  $\mu$ L - 500  $\mu$ L  
MICROLAB MPH-96 and MPH-48



MICROLAB MPH-96

25  $\mu$ L - 10 mL  
MICROLAB 4000/4200 MPH Series

Configurations:  
Single Probe  
MPH-4  
MPH-6  
MPH-8  
MPH-12





MICROLAB 4200 MPH-8

25  $\mu$ L - 10 mL  
MICROLAB 4000/4200 SPE



MICROLAB 4200 SPE







## Ordering Information\*

Volume	25 $\mu$ L	50 $\mu$ L	100 $\mu$ L	250 $\mu$ L	500 $\mu$ L	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025
<b>TLLXB, TLL with stop &amp; backbushing</b>										
		80947	81047	81147	81247					

### Benefits of back-bushing syringes:

- increases plunger tip life
- maintains proper plunger alignment
- reduces the particles generated by plunger to glass contact

## Ordering Information\*

Volume	25 $\mu$ L	50 $\mu$ L	100 $\mu$ L	250 $\mu$ L	500 $\mu$ L	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025
<b>TLLX, TLL with stop</b>										
						81323				
<b>TLLXB, TLL with stop &amp; backbushing</b>										
		80223	80947	81047	81147	81247				
<b>TLL, TEFLON® Luer Lock</b>										
							81420	81520	81620	

\* Contact Hamilton for information regarding probe head/syringe compatibility.

# Previously Manufactured Products



MICROLAB® 1000 Plus

Digital Diluter

## Ordering Information

### MICROLAB 1000 Plus

Volume	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL	25 mL
Model	1701	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025

#### AD, ACCUDIL™ with stop



201000 201050 201100 201150 201200 201250 201300 201350

#### DAD, Diluter ACCUDIL with stop



201500 201550 201600 201650 201700

### Digital Diluter & MICROLAB 400

#### DX, Diluter with stop



80226 80926 81026 81126 81226 81326

#### TLLX, TLL with stop



80922 81022 81122 81222

#### TLL, TEFLON® Luer Lock



81320 81420 81520 81620

Obsoleted from our product offering: MICROLAB® 1000, Digital Diluter, MICROLAB 400, M and 900

For your convenience, they are listed here to help you select replacement syringes.



MICROLAB 900



MICROLAB M

## Ordering Information

### MICROLAB M

Volume Model	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL	25 mL
TLLX, TLL with stop			80922	81022	81122	81222	81323				
TLL, TEFLON® Luer Lock								81420	81520	81620	

### MICROLAB 900

#### CX, CHEM with stop

		80062*
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#### TLLX, TLL with stop

		80222	80922	81022	81122	81222	81323
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#### DX, Diluter with stop

		80226	80926	81026	81126	81226	81326
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#### TLL, TEFLON® Luer Lock

		81320	81420	81520	81620
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\* Requires a special valve with 1/4"-28 threaded ports. ML900 Series Part #0159572.