## AUTOMATED LIQUID HANDLING



## **Instrument Syringes**





## 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<sup>®</sup> 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 PTFE construction provides an inert flow path for the most demanding applications. Interference fit between the 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 PTFE plunger tips.

The plunger tip is made of durable ultra-high molecular weight polyethylene (UHMWPE) – a harder material than 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<sup>®</sup> 1000 PLUS diluter/dispenser.



### C, Chem

**D**, Diluter

autoclavable.

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





### **DAD, Diluter ACCUDIL**

Used with MICROLAB 500 Series diluters.

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

TLL, PTFE Luer Lock, male fitting with M6 x 1 female, side port;



### TLL/TLLX, PTFE 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  $\mu$ L 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 runaway 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, PTFE 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, PTFE Luer Lock with stop & TLL, PTFE 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® 500 Series

10 μL - 25 mL MICROLAB 500 Diluters; ML503A, ML530B, ML532BP, ML531C MICROLAB 500 Dispensers; ML501A, ML510B, ML512BP, ML511C



## **Ordering Information**

	Volume Model	10 μL 1701	25 μL 1702	50 μL 1705	100 µL 1710	250 μL 1725	500 μL 1750	1 mL 1001	2.5 mL 1002	5 mL 1005	10 mL 1010	25 mL 1025
CX, CHEM* with stop * Requires a special valve with 1/4" - 28	threaded parts, PN 35788	80062 8.	80262	80962	81062	81162	81262					
DX, Diluter with stop (Sample Syringe)			80226	80926	81026	81126	81226	81326				
TLLX, TLL with stop (Reagent Syringe)			80222	80922	81022	81122	81222	81323				
TLL,PTFE Luer Lock (Reagent Syringe)	-							81320	81420	81520	81620	82521
Salt Line Syringes TLL-SAL,PTFE Luer Lock	-					203220	203230	203240	203250	203260	203270	

### **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/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 μL - 25 mL "Full-height" (9") precision syringe pump, PSD2



12.5 μL - 12.5 mL "Half-height" (4.5") precision syringe pump, PSD3



## **Ordering Information**

	Volume Model	10 μL 1701	25 μL 1702	50 μL 1705	100 μL 1710	250 μL 1725	500 μL 1750	1 mL 1001	2.5 mL 1002	5 mL 1005	10 mL 1010	25 mL 1025
TLL, PTFE Luer Lock	H							81320	81420	81520	81620	82521*
TLLX, TLL with stop	FF		80222	80922	81022	81122	81222	81323				
TLLXB, TLL with stop & k	backbushing			80947	81047	81147	81247					
Salt Line Syringes TLL-SAL, PTFE Luer Loc	k M					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**

5	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											
E	1	5495-10	5495-15	5495-20	5495-25	5495-30	5495-35				

### TLL, PTFE Luer Lock



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

### **Syringe Cleaning Tips**

- The life of your GASTIGHT<sup>®</sup> 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 biodegradeable, 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 PTFE-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 μL - 10 mL XL-3000 modular digital syringe pump





50 μL - 5 mL XP-3000 modular digital syringe pump



## **Ordering Information**

	Volume	50 µL	100 µL	250 µL	500 µL	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
60 mm TLL, PTFE Luer Loc	k								
8	0	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 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL
	Model	1705C-XP	1710C-XP	1725C-XP	1750C-XP	1001C-XP	1002C-XP	1005C-XP
30 mm C, CHEM								
	5 100 ED	201720	201730	201740	201750	201760	201770	201780

### **Sterilizing Syringes**

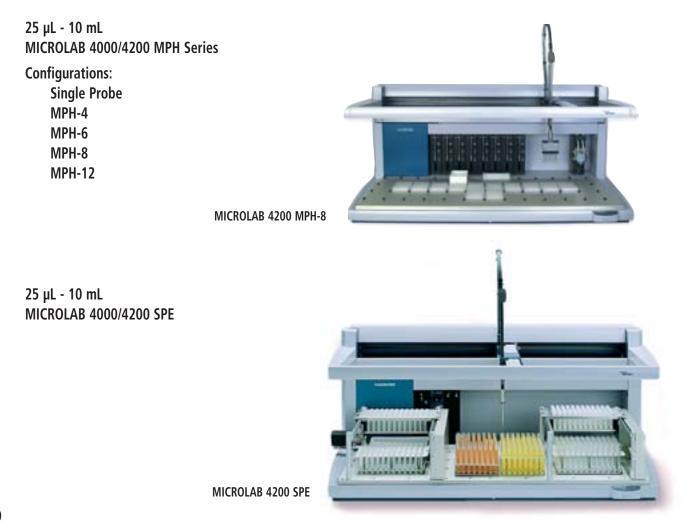
Sterilize your Hamilton syringe using an appropriate chemical sterilizer. Rinse the syringe thoroughly after sterilization. In general, Hamilton Company does not recommend autoclaving syringes. Stainless steel expands faster than glass upon heating. Heating a syringe with a cemented, stainless steel 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®4000 Instruments

50 μL - 500 μL MICROLAB MPH-96 and MPH-48



MICROLAB MPH-96



## **Ordering Information\***

-	Volume	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL	25 mL
	Model	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025
TLLXB, TLL with stop & backbu	ishing										
<b>F</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\***

5	Volume	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL	2.5 mL	5 mL	10 mL	25 mL
	Model	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025
TLLX, TLL with stop							81323				
TLLXB, TLL with stop & back	bushing	80223	80947	81047	81147	81247					
TLL, PTFE Luer Lock	-							81420	81520	81620	

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

# Previously Manufactured Products



## **Ordering Information**

### **MICROLAB 1000 Plus**

WICKULAD 1000 Flus												
	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 <sup>™</sup> with stop												
	0			201000	201050	201100	201150	201200	201250	201300	201350	
DAD, Diluter ACCUDIL with stop	)											
				201500	201550	201600	201650	201700				
Digital Diluter & MICROLA	AB 400											
DX, Diluter with stop												
	1		80226	80926	81026	81126	81226	81326				
TLLX, TLL with stop												
	1			80922	81022	81122	81222					
TLL, PTFE Luer Lock												
	1							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.



## **Ordering Information**

### MICROLAB M

	Volume	10 µL	25 µL	50 µL	100 µL			1 mL	2.5 mL	5 mL	10 mL	25 mL
	Model	1701	1702	1705	1710	1725	1750	1001	1002	1005	1010	1025
TLLX, TLL with stop				00000	01022	01122	01222	01222				
	FF			80922	81022	81122	81222	81323				
TLL, PTFE Luer Lock												
	F								81420	81520	81620	
MICROLAB 900												
CX, CHEM with stop												
	F	80062*										
TLLX, TLL with stop												
	FF		80222	80922	81022	81122	81222	81323				
DX, Diluter with stop												
A. P.	F		80226	80926	81026	81126	81226	81326				
TLL, PTFE Luer Lock												
2.								81320	81420	81520	81620	

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

# General Ordering Information

	He
	HAMILTON THE MEASURE OF EXCELLENCE*
Office Hours:	Weekdays 7 am – 5 pm Pacific Standard Time Toll Free 1-800-648-5950 or 1-775-858-3000 Fax: 1-775-856-7259
Toll Free Order Hotline:	<b>1-888-525-2123</b> For your convenience, please have your account number and your purchase order number ready when placing an order. Major Credit Cards Accepted
Order Online: Via Email:	www.hamiltoncompany.com sales@hamiltoncompany.com
Terms:	After credit responsibility has been established with Hamilton Company, 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 can place an order with a credit card.
Shipping:	All domestic shipments are FOB Reno, Nevada, U.S.A., by United Parcel Service unless otherwise specified. All international shipments are FOB Reno, Nevada, U.S.A., to be shipped as specified by purchaser.
Warranty:	All Hamilton products are unconditionally guaranteed to be free of defects in materials and workmanship for one year (12 months) from date of purchase.
Returned Goods/ Restocking Charges:	Any product returned to Hamilton Company for repair, evaluation, or exchange must be accompanied by an assigned Returned Goods Authorization (RGA) tracking number. Unauthorized returns 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 Company 4990 Energy Way Reno, Nevada 89502

## Standard Conditions of Sales

### STANDARD CONDITIONS OF SALE (of Hamilton Company, "The Company")

#### 1. GENERAL

All orders are accepted and executed on the understanding that the Purchaser is bound by the following Standard Conditions of Sale. Where there is any inconsistency between these Standard Conditions of Sale and any conditions which the Purchaser seeks to impose, these Standard Conditions of Sale shall prevail.

Any deviations from these Standard Conditions of Sale shall only be binding upon the Company if the latter has expressly agreed thereto in writing.

### 2. VALIDITY OF QUOTATIONS

The Company reserves the right to refuse the Purchaser's acceptance of a quotation unless such quotation is stated to be open for a specific period and is not withdrawn in such period.

#### 3. PRICES AND DISCOUNTS

The published prices of the Company's Products are those ruling on the date of publication and are subject to alteration without notice. Prices and currency transactions are in U.S.A. dollars.

### 4. PAYMENT

Unless otherwise agreed by the Company in writing, the goods shall be paid for in cash within 30 days following the date of the relevant invoice. The Company's prices are net and are not subject to any settlement terms.

The Purchaser may not claim any set-off against the Company. In the event of a delay in payment, the Company shall be entitled to claim, without any notice of default being required and without prejudice to any further rights it may have, interest at a rate of one and a half percent (11/2%) per month or at the legal interest rate, whichever is the higher value. All costs of collection shall be fully for the Purchaser's account; extrajudicial costs shall be fixed at ten percent (10%) of the amount owed by the Purchaser and shall be at least fifteen hundred U.S. dollars (USD 1,500.00).

In the event that any payment in respect of Products supplied becomes overdue, the Company may immediately terminate the Purchaser's power of sale under clause 14 of this document and may without prior notice to the Purchaser enter upon the premises of the Purchaser to repossess unpaid goods.

### 5. NEW ACCOUNTS

Where a credit account is desired, a bank and as many as five trade references may be required The Company reserves the right not to grant credit to any Purchaser for any reason whatsoever.

### 6. CARRIAGE

Unless otherwise agreed by the parties, goods are delivered by the Company FOB Reno, Nevada, U.S.A. to the Purchaser's registered office exclusive of duty, insurance, taxes, and VAT. When special delivery arrangements are requested, special rates will be charged.

All delivery times shall be approximate, except if a fixed time of delivery has been specifically agreed to in writing by the Company, in which case a delay in the delivery shall solely entitle the Purchaser to cancel, without costs, the order for the goods not delivered.

#### 7. PACKING

A charge is made when it is necessary to dispatch goods in crates or cases, but this amount will be redited in full on the return, within one month, of the crates or cases in good condition carriage paid. No charge is made for any other form of packing and no credit will be allowed for its return.

### 8. LOSS OR DAMAGE IN TRANSIT

Clear receipts should be given only if goods have been examined, as an unqualified signature may react to the disadvantage of the Purchaser if the consignment should become the subject of a claim In the event of short delivery or damage in transit, it is essential that the Company's dispatching depot be advised within two days of receipt of goods. The following details should be sent in writing to the Company:

- Advice note number b
- Carrier's name
- Condition of package
- d. Date of consignment received Extent of damage or shortage

In the event of non-delivery, the Company's dispatching depot should be advised within seven (7) days of the date of invoice. The Company will not be responsible for goods lost or damaged in transit unless the above conditions are observed.

### 9. DELIVERY

The Purchaser shall be obliged to cooperate in the delivery of the Products and to take receipt of same. The Company may keep any goods refused or not accepted by the Purchaser at the latter party's disposal for account and at the risk of the Purchaser.

### **10. LIABILITY FOR DELAY**

Any times quoted for dispatch, delivery, repair, or replacement are to be treated as estimates only and the Company shall not be liable for failure to dispatch, deliver, repair, or replace within such time unless the Purchaser has suffered loss thereby and the amount payable in respect thereof shall have been agreed in writing as liquidated damages, in which case the Company's liability shall be limited to the amount so agreed to be paid.

In all cases, whether a time for dispatch, delivery, repair, or replacement be quoted or not, the time for dispatch, delivery, repair, or replacement shall be extended by a reasonable period if delay in dispatch, delivery, repair, or replacement is caused by instructions or lack of instructions from the Purchaser or by industrial dispute or by any cause whatsoever beyond the Company's reasonable control

#### 11. DEFAULT

The Company shall have the right to discontinue delivery and also at its discretion to terminate any agreement in respect of any undelivered goods if the Purchaser defaults in payment as stated under clause 4 of this document or in respect of its other obligations to the Company.

#### 12. DEFECTS AFTER DELIVERY

The Company will make good, by repair at the Company's option, or by the supply of replacement, defects, which under proper use, appear in the goods within a period of 12 calendar months after the goods have been delivered and arise solely from faulty design, materials or workmanship; provided that no complaints shall be admissible unless submitted in writing to the Company within five (5) days after

the time of discovery of the defect or after the time the defect should have been discovered, whichever time comes first, it being understood that the Purchaser shall take reasonable care to discover any defect of whatever nature as soon as possible after taking delivery.

Provided further that in respect of parts or components not of the Company's manufacture, the Company will give the Purchaser a guarantee equivalent to the guarantee (if any) that the Company may have received from the supplier of such parts or components in respect thereof but not so as to impose on the Company in respect of such parts or components a liability greater than that imposed on it by the aforesaid period of this clause.

Save as aforesaid and as provided in clauses 8 and 10, the Company shall not be under any liability in respect of defects in goods delivered or for any injury, damage, or loss resulting from such defects or from any work done in connection therewith and its liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality of fitness for any particular purpose of such goods.

### 13. SPECIAL ORDERS

All orders for non-standard products or package quantities not included in current Company catalogues and literature, are considered to be special orders and will be dealt with at the discretion of the Company

### 14. RESERVATION OF OWNERSHIP/PASSING OF RISK

Products supplied to the Purchaser by way of sale shall remain the property of the Company until payment in full of all its claims on the Purchaser on whatsoever account has been received by the Company but risk in the same shall pass upon delivery.

The Purchaser acting as bailee shall deal with the goods separately and store according to the agreed methods of storage so that the goods not paid for may be clearly identified and shall not be mixed with other goods

The Purchaser shall be entitled to pass ownership in unpaid goods to third parties provided that all sums received shall be held for the account of the Company.

#### 15. RETURN OF GOODS

The Company does not accept the return of goods for credit unless it is a justified warranty claim. All returns must be authorized in advance. Unauthorized returns will be refused. In no circumstances may goods supplied against a firm order be returned without the Purchaser having first applied for and obtained both written consent and a Returned Goods Authorization (RGA) number from the Company.

The Company reserves the right to refuse the return of any Product that has been used with infectious, microbiological, or radioactive substances or other materials that may be deemed hazardous to the employees of the Company.

A handling charge amounting to not more than 20 percent of the invoice value of the returned goods may be deducted from any credit allowed where it is established that the reason for their return is not subject to the provision of clause 8 or 12 hereof or through any error on the part of the Company

Goods approved for return must be received by the Company within 30 (thirty) days of the Company's written consent.

### 16. DESCRIPTIVE MATTER AND ILLUSTRATIONS

All descriptive and forwarding specifications, drawings, and particulars of weights and dimensions issued by the Company are approximate only, and are intended only to present a general idea of the goods to which they refer and shall not form part of a contract.

### 17. FORCE MAJEURE

Any party will be excused from performing under a sale agreement or any other agreement of which these Standard Conditions of Sale are part if prevented by an event of force majeure including strike, lockout, or other major trouble affecting labor relations.

If any such event of force majeure should last for more than two (2) consecutive months, any party may elect to terminate this Agreement immediately upon giving a written notice to the other party.

### 18. PATENTS

In the event of any claim being made or action being brought against the Purchaser in respect of infringement of local patents by the user or sale of goods supplied hereunder, the Purchaser is to notify the Company immediately, and the Company shall be at liberty with the Purchaser's assistance if required, but at the Company's expense, to conduct through the Company's own lawyers and experts all negotiations for the settlement of the same or any litigation that may arise therefrom; subject to such notifications and provided that no such goods, or any part thereof, shall be used for any purpose other than that for which the Company supply them, the Company will indemnify the Purchaser in respect of any such claims.

### **19. TRADEMARKS**

- a. The only Hamilton trademarks that the Purchaser may display to advertise and sell the Products shall be those trademarks under which the Products are sold by the Company to the Purchaser hereunder or such other trademarks expressly authorized by the Company (hereinafter called "the said trademarks") and the Purchaser shall comply with the Company's instructions as to the manner and context in which the said trademarks and the statements to accompany them are displayed.
- b. No trademarks of the Products shall be undertaken by the Purchaser or any person on the Purchaser's behalf without the Company's prior written consent nor will the Purchaser alter, obliterate, add to, or otherwise interfere with the said trademarks.

### 20. LEGAL CONSTRUCTION

These Standard Conditions of Sale and all sale contracts to which the same apply shall be construed in accordance with the laws of the State of Nevada, U.S.A, and the authoritative text shall be that in the English language set out herein. Any disputes arising in connection with these Standard Conditions of Sale and all sale contracts to which the same apply shall be finally settled by arbitration in accordance with the laws and rules of the State of Nevada and such proceedings held and located in Reno, Nevada, U.S.A.



### **Hamilton Company**

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### **Quality Hamilton Products:**

**MICROLITER™** Syringes GASTIGHT<sup>®</sup> Syringes **Chromatography Syringes** Syringes for Life Science Instrument Syringes SoftGrip<sup>™</sup> Pipettes **Miniature Valves Modular Valve Positioner** Laboratory Fittings, Adapters & Tubing Precision Syringe Pumps **MICROLAB®** Diluters & Dispensers Electrochemical Sensors DURACAL<sup>™</sup> Buffer Solutions **HPLC Columns & Resins** Laboratory Automation for: Drug Discovery Proteomics Forensics In Vitro Diagnostics

## http://www.hamiltoncompany.com Sales/Support USA 1-888-525-2123

### TRADEMARKS:

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