

Precision and Accuracy for Every Lab

More Than 2,000 Laboratory Products for Liquid Handling,
Sample Preparation, Separations, and More



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Application Highlights

More than 50 Years of Quality and Innovation,
from Chromatography to Cannabis

For more than 50 years, Hamilton laboratory products have been satisfying customer needs in the field of precision liquid handling and measurement. Beginning with the invention of the Microliter syringe for chromatography, Hamilton has grown its portfolio of top-quality, hand-crafted laboratory products to include HPLC columns, laboratory pH electrodes, manual pipettes, and semi-automated diluters and dispensers.



Hamilton adapts to customer needs and features several products that are helping support scientists and laboratory technicians in high demand applications, including the following:



Oligo Purification

Synthetic oligonucleotide purifications are demanding applications for silica-based HPLC columns. Using methods that are commonly performed at more than 100°C and use alkaline mobile phases, silica-based columns work well to start, but then rapidly decline in efficiency.

That's why many oligo manufacturers have turned to polymeric divinylbenzene HPLC columns from Hamilton.

Hamilton's PRP-C18 offers a porous C18-functionalized polymer that exhibits excellent chemical and thermal stability. PRP-C18 does not dissolve, phase-strip, or bleed even under the most extreme operating conditions. This unlocks the power of superior resolution between long oligos and unwanted failure sequences.



Environmental Testing Throughput

Environmental testing labs grow their business by increasing throughput and lowering per-sample costs. That is a difficult task for labs that are trying to scale their productivity through manual sample processing that suffers from technician-to-technician variability or cumbersome process controls.

By contrast, labs that have turned to Hamilton's Microlab 600 are eliminating costly re-sampling expenses and reducing sample prep time by as much as 50 percent. Methods are pre-programmed and executed without deviation while on-screen instructions guide the user through each step of dilution or dispensing activities.



Cannabis Production

Laboratories throughout legal regions of the United States and Canada have found themselves searching for an affordable, effective means by which to purify and isolate such cannabinoids as THC, CBD, and CBN.

Hamilton has developed the HxSil C18 HPLC column for cannabinoid analysis that can be used on any analytical HPLC system and does not require the use of special UHPLC technology. Together with a pre-canned method, excellent chemical stability from our end-capping process, and superior mass transfer effects that impart exceptional peak symmetry, Hamilton delivers a solution to start purifying cannabinoids right out of the box.





Syringes

Hamilton syringes are the finest precision fluid measuring devices available. Top quality materials and skilled workmanship ensure Hamilton syringes consistently deliver the highest possible performance for reliable analyses. With proper care and handling, Hamilton syringes provide unsurpassed performance for many years.

For manual dispenses, our syringes are accurate to within $\pm 1\%$ of nominal volume with a precision of 1% at 80% of the total volume. The fluid path of a Hamilton syringe is chemically inert with stainless steel, borosilicate glass, and PTFE used for most syringes. N.I.S.T. traceable certification is available as an additional service for the majority of the syringes in our product line.

Hamilton continuously researches new materials and methods to improve the form, fit, and function of our syringes. You can be confident that when you buy from Hamilton you are receiving a top-quality instrument. For the latest information on new products please visit www.hamiltoncompany.com.

Hamilton's broad product offering includes more than 2,000 syringe and accessory part numbers. This reference guide organizes these parts into logical groupings and provides supporting technical information for the most commonly asked questions.



Syringe Selection Quick Start Guide

Step 1

Does Your Application Require Microliter or Gastight?

Microliter Syringes

Hand-fitted stainless steel plungers achieve a liquid tight seal with a nearly frictionless operation, minimizing wear and ensuring longevity.

Syringe Series: 600, 700, 800, 7000

Gastight Syringes

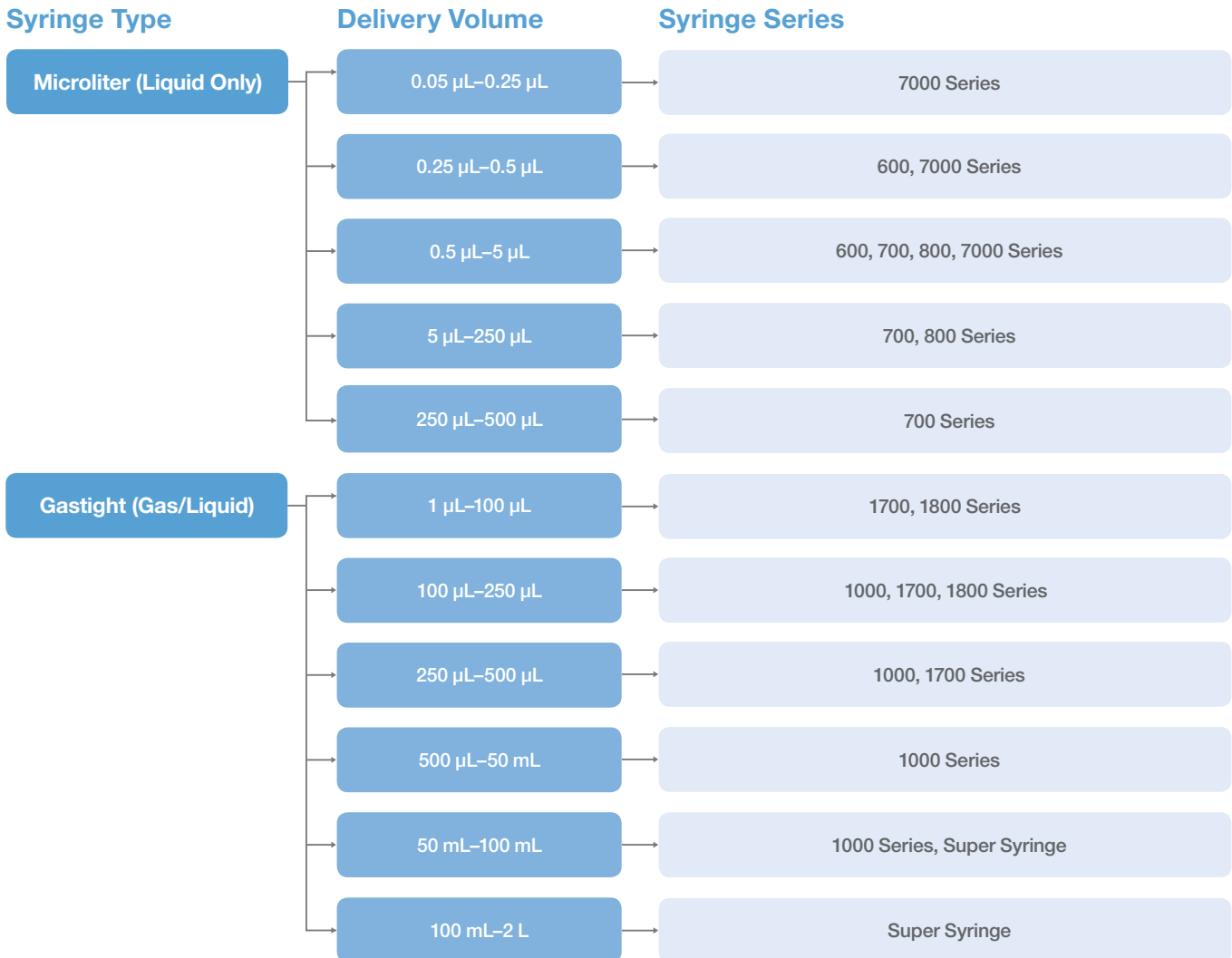
Inert PTFE plunger tips create a gastight seal that is ideal for long dispense times, heterogenous solutions, or viscous liquids.

Syringe Series: 1000, 1700, 1800, Super Syringes

Step 2

Choose Your Dispensing Volume and Series

Hamilton offers syringes at dispense volumes that range from 0.5 μL all the way up to 2 L. Once you know your desired dispensing range, review the syringe series options available. See more information on each series on the next page.



Step 2

Choose Your Dispensing Volume and Series (Cont.)

600 Series Syringes

This series offers low-volume, removable needle solutions that only require half of the standard stroke length, making them ideal for one-handed operation such as with animal injections.

700 Series Syringes

This series is the original Hamilton syringe. They were designed to solve the general liquid handling requirements of manufacturing and research laboratories and remains the industry standard.

800 Series Syringes

This series has the same liquid handling capabilities as the 700 series but with the addition of an aluminum syringe holder designed to eliminate plunger damage.

7000 Series Syringes

These zero-dead-volume syringes employ a plunger wire inside the needle to accurately dispense ultra-low volumes. The needle is bored to extremely accurate tolerances to accommodate the plunger wire.

1000 Series Syringes

This series is the mid-volume solution for all liquid and gas handling needs.

1700 Series Syringes

This series is the Gastight version of the original Hamilton 700 series syringe. They are designed to meet the low volume liquid or gas handling needs of research and manufacturing laboratories.

1800 Series Syringes

This series is designed to eliminate the possibility of plunger damage. They have the same liquid handling capabilities as the 1700 series but the extended plunger eliminates breakage and allows the user some control over the dispense speed.

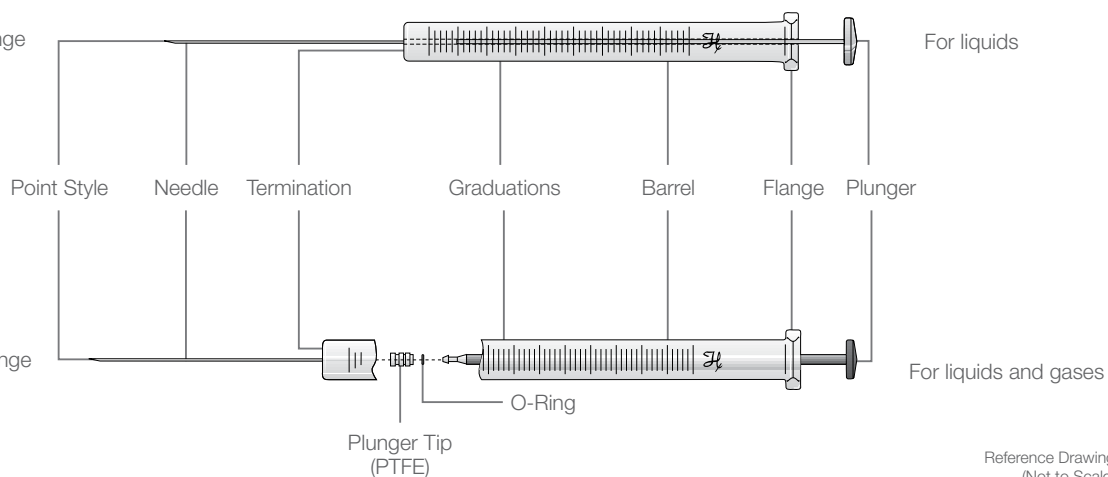
Super Syringes

Super syringes are designed primarily for air sampling, preparing gas standards, calibrating reservoirs, and pneumographs.

Examples of Hamilton Microliter and Gastight Precision Syringes

700 Series Microliter Syringe
Cemented Needle (N)
Point Style 2 Needle

1700 Series Gastight Syringe
Cemented Needle (N)
Point Style 2 Needle





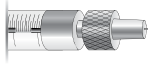
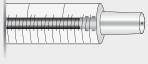
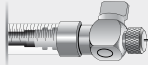

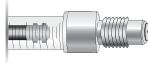


Reference Drawing
(Not to Scale)








Step 3 Choose Your Syringe Termination

Hamilton's nine syringe terminations are designed to accommodate a wide range of application needs like low-volume, high-pressure, or special needles. Learn more at hamiltoncompany.com.

ID	Termination Style	Termination	ID	Termination Style	Termination
N and SN		Cemented Needle	RN		Removable Needle
					
LTN and LTSN		Luer Tip Cemented Needle	KH		Knurled Hub
LT		Luer Tip	SL		SampleLock™
TLL		PTFE Luer Lock	C		ChemSeal

Step 4 Choose Your Needle Specifications

Hamilton needles come in gauges ranging from 18 to 33 (some limitations apply) and can be typically cut to any length between 0.4 and 12 inches. The final decision you will need to make is which point style is most appropriate for your application.

ID	Point Style	Description
2		10–12° sharp, beveled, curved non-coring
3		Blunt, electro-polished
4		Sharp 10–12° beveled needle
5		Conical with side port for penetration without coring
AS		Conical, non-coring designed to withstand multiple injections

Manual HPLC Syringes

Manual HPLC syringes are equipped with a point style 3 (blunt) needle to fit HPLC injection valve seats without damaging the rotor seal. Hamilton Company manufactures a complete range of high performance liquid chromatography (HPLC) syringes and thin-layer chromatography (TLC) syringes.

Benefits

- HPLC syringes are designed for manual or autosampler injection ports.
- The needle is blunt and electro-polished to slide smoothly into the injection port, reducing the wear on critical seals.

Gastight Syringes



Syringe Termination	ThomasSci Part No.	Volume (µL)	Model	Gauge	Removable Needle ThomasSci Part No.
Cemented Needle N	8928N30	25 µL	1702	22s	—
	8928N32	50 µL	1705	22s	—
	8928N34	100 µL	1710	22s	—
Cemented Needle LTN	8928N36	250 µL	1725	22s	—
	8928N38	500 µL	1750	22	—
Removable Needle (RN)	8928N50	10 µL	1701	22s	8929F65
	8928N52	25 µL	1702	22s	8929F65
	1196K02	50 µL	1705	22s	8929F65
	1196K01	100 µL	1710	22s	8929F65
	8928N58 ¹	250 µL	1725	22s	8929F93
	8928N60	500 µL	1750	22	8929F95

All Needles are 2 in (51 mm)
¹22 gauge needle

Microliter Syringes



	ThomasSci Part No.	Volume (µL)	Model	Gauge
Cemented Needle (N) Syringe (point style 3)	8928N10	10 µL	701	22s
	8928N12	25 µL	702	22s
	8928N14	50 µL	705	22s
	8928N16	100 µL	710	22s
	8928N18	250 µL	725	22
	8928N20	500 µL	750	22

All Needles are 2 in (51 mm)



Manual GC Syringes

Hamilton provides a variety of syringes that are designed for use with manual GC injection ports. GC syringes are fitted with a point style 2 (beveled) needle to pierce injection port septa without damage. Manual GC Microliter™ syringes are used for liquid samples and manual GC Gastight® syringes can be used for gas and liquid samples.

Syringes for Manual Injection of Liquid Samples



Syringe Termination	ThomasSci Part No.	Volume (µL)	Model	Gauge	Removable Needle ThomasSci Part No.
Cemented Needle (N) Syringe (point style 2)	8928B58	5 µL	75	26s	—
	8928B60	10 µL	701	26s	—
	8928B64 (6 pk)				
	8929A40	25 µL	702	22s	—
	8929A45	50 µL	705	22s	—
	8929A50	100 µL	710	22s	—
	8929A55	250 µL	725	22s	—
Removable Needle (RN) Syringe (point style 2)	8929A60	500 µL	750	22	—
	1207K83	5 µL	75	26s	8928C41
	8929A70	10 µL	701	26s	8928C41
	8928B64 (6 pk)				
	8929A75	25 µL	702	22s	8928C44
	8929A80	50 µL	705	22s	8928C44
	8929A85	100 µL	710	22s	8928C44
8929A90	250 µL	725	22s	8929F83	
8929A95	500 µL	750	22	8929F85	

Zero Dead Volume Syringes



	ThomasSci Part No.	Volume (µL)	Model	Gauge
Knurled Hub (KH) Syringe (point style 2)	8929C61	0.5 µL	7000.5	25
	8929C63	10 µL	7001	25
	8929C67	25 µL	7002	25
	8929C71	50 µL	7105	24

HPLC Autosampler Syringes

HPLC autosamplers enable the automatic introduction of samples into the sample loop as well as some sample preparation.

Hamilton maintains a large catalog of replacement syringes for the most popular HPLC autosamplers.

- Agilent HPLC
- Antec HPLC
- Beckman Coulter HPLC
- Bruker Varian HPLC
- CTC/LEAP PAL HPLC
- Dionex HPLC
- Grace Alltech HPLC
- Hitachi HPLC
- Kontron HPLC
- Perkin Elmer HPLC
- Shimadzu HPLC
- Spark Holland HPLC
- Spectra Physics
- ThermoFinnigan HPLC
- Waters HPLC

Featured Product: X-Type Autosampler Syringes

Hamilton, together with CTC Analytics, designed the X-Type syringe for use with PAL System liquid chromatography (LC) autosamplers. The syringes feature near zero carryover and a long-lasting plunger tip to meet the requirements of sensitive, high-throughput LC applications. The X-Type syringe is designed for sensitive LC samples such as proteins, peptides, phospholipids, or smaller amines.

Benefits

- The syringe glass barrel is polished and sealed for inertness and enhanced lifetime.
- The needle is deactivated to reduce sample adsorption.



X-Type Syringes



ThomasSci Part No.	Volume	Gauge	Needle Length	Point Style	Standard Needle Dead Volume
1206F89	100 µL	22	2 in (51 mm)	3	6.81 µL
1206F90	100 µL	22s	2 in (51 mm)	3	1.13 µL
1206F88	25 µL	22s	2 in (51 mm)	3	1.13 µL
1180Q50	50 µL	22s	2 in (51 mm)	3	1.13 µL

All syringes above are Gastight with a Fixed Needle termination.



GC Autosampler Syringes

GC autosamplers enable the automatic introduction of samples into the injector of the gas chromatograph (GC). Hamilton maintains a large catalog of replacement syringes for the most popular gas chromatography autosamplers.

- Agilent GC
- Bruker Varian GC
- CTC/LEAP PAL GC
- Perkin Elmer GC
- Shimadzu GC
- Thermo Finnigan GC

Benefits

- The point style AS (for autosampler) is designed to withstand repeated puncturing through the GC injection port septa.
- Syringes for headspace injection come with a point style 5 (conical with side port), which is ideal for large gas volume injection.
- Autosampler syringes are available in various gauges depending on the type of injector used.

Featured Product: HDHT Headspace Syringes

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

Modern GC headspace analysis requires injecting over large temperature ranges. Conventional headspace syringes use a rubber O-ring sealed plunger which has a limited sealing performance at high temperatures due to varying thermal expansion between the different materials. HDHT-type syringes employ a unique spring in the plunger tip which compensates for the materials' different expansion coefficients, creating a superior seal over a larger temperature range, improving syringe lifetime.

HDHT Headspace Syringes



ThomasSci Part No.	Model Number	Volume	Gauge	Needle Length	Point Style	Standard Needle Dead Volume
1183J18	1001 GF	1 mL	23	2 in (51 mm)	5	4.76 µL
1183J19	1001 GF	1 mL	26	2 in (51 mm)	5	2.70 µL
1183J20	1002 GF	2.5 mL	23	2 in (51 mm)	5	4.76 µL
1183J21	1002 GF	2.5 mL	26	2 in (51 mm)	5	2.70 µL
1183J22	1005 GF	5 mL	23	2 in (51 mm)	5	4.76 µL
1180Q49	1005 GF	5 mL	26	2 in (51 mm)	5	2.70 µL



Find the Right Replacement Syringe for Your Autosampler

Request a Printed Copy of Hamilton's Syringe & Needle Reference Guide at hamiltoncompany.com/reference-guides



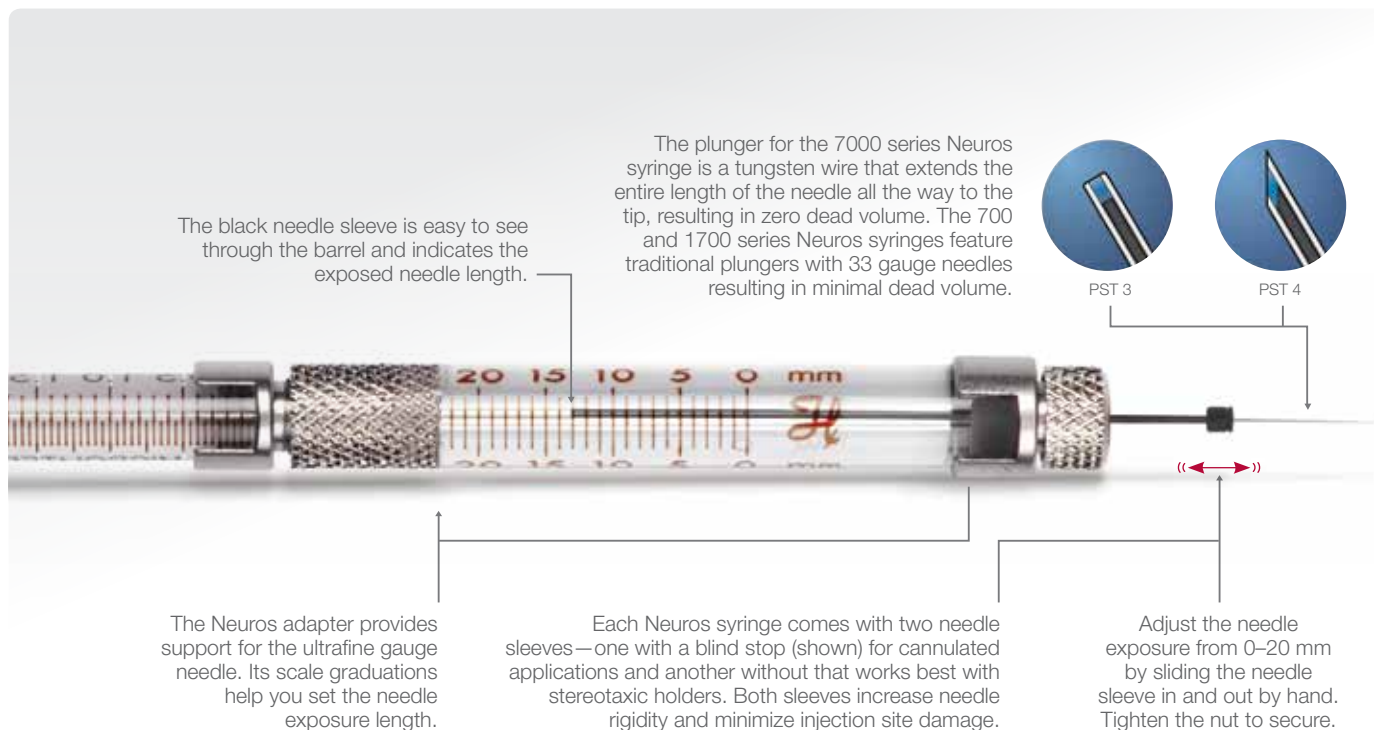
Neuroscience Syringes

Hamilton Neuros

Hamilton Neuros syringe technology provides unprecedented functionality for controlled animal injections. The Neuros accurately dispenses volumes between 50 nL and 100 μ L through an ultrafine needle. Developed specifically for neuroscience applications, the Neuros enables the delivery of microvolumes to an exact location while minimizing injection site damage. Neuros syringes come with two types of protective sleeves. The sleeve with a blind stop is perfect for cannulated applications and ensures targeted administration with an adjustable penetration depth. The version without a blind stop works best with stereotaxic holders. Both models provide an adjustable needle exposure of 0 to 20 mm.

Benefits

- Needle rigidity improves insertion path accuracy.
- Minimal tissue damage reduces injection variability.
- Reduced sample loss saves money and materials.
- A fine gauge needle creates smaller injection sites.
- Compatibility with most infusion pumps and stereotaxic holders means an easy integration into existing processes.



Neuros Syringe Assemblies



ThomasSci Part No.	Volume	Gauge	Point Style	Syringe Series
1209C55	0.5 µL	32	3	7000
1183U29	0.5 µL	32	4	7000
1209C56	1.0 µL	32	3	7000
1183U30	1.0 µL	32	4	7000
1209C57	2.0 µL	30	3	7000
1183U31	2.0 µL	30	4	7000
1209C58	5.0 µL	33	3	700
1183U32	5.0 µL	33	4	700
1209C59	10 µL	33	3	1700
1183U33	10 µL	33	4	1700
1209C60	25 µL	33	3	1700
1183U34	25 µL	33	4	1700
1209C61	50 µL	33	3	1700
1183U35	50 µL	33	4	1700
1209C62	100 µL	33	3	1700
1183U36	100 µL	33	4	1700

Neuros Accessories



ThomasSci Part No.	Volume	Gauge	Point
1209C63	Needle 5–100 µL–6 pk	33 ga	3
1183U38	Needle 5–100 µL–6 pk	33 ga	4
1192C12	Adapter Kit for 5–100 µL RN syringes	33 ga	3
1183U37	Adapter Kit for 5–100 µL RN syringes	33 ga	4



Sample Preparation and Dilution

The Microlab® 600 is a highly precise syringe pump with a touchscreen interface designed to quickly and easily dilute and dispense fluids. This positive displacement system provides better than 99%

accuracy, independent of a liquid's viscosity, vapor pressure, and temperature. The inert fluid path minimizes sample carryover and is compatible with harsh chemicals.

Microlab 600 Diluter and Dispensers

The Microlab 600 offers labs a way to securely monitor processes and greatly increase efficiency. No more adjusting pipettes and recalculating dilutions. Quickly recall stored dispenses and dilutions with the Favorites Menu. Trigger the hand probe or tap the foot switch to actuate the syringe drives according to a predefined program. These are just some of the conveniences of the Microlab 600.

Benefits

- Reduce time preparing samples or dispensing reagents
- Minimize experimental variation from one user to the next
- Manage log files from any PC
- Complies with EPA, FDA, GLP, GMP, 21 CFR Part 11, and ISO regulations
- N.I.S.T. traceable calibration

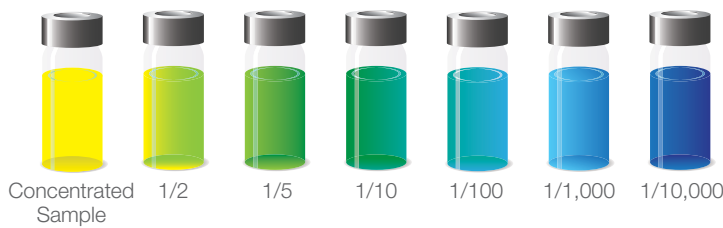
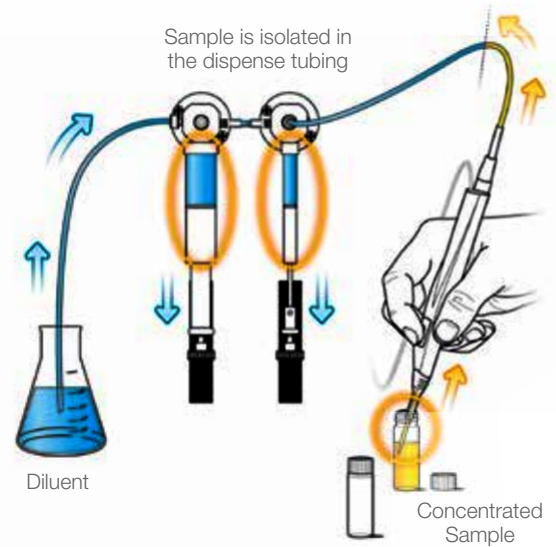


How Does It Work?

Step 1. Program sample and diluent volume.

Step 2. Trigger the hand probe to fill left syringe with diluent and aspirate sample into the hand probe with the right syringe.

Step 3. Trigger the hand probe to dispense the sample and then the diluent into the vial to complete the dilution and wash the tube for the next sample.



Application	Configuration	Controller	ThomasSci Part No.
Dilution	PTFE Tube Diluter	Basic	1221W10
		Advanced	1221W14
	Disposable Tip Diluter	Basic	-
		Advanced	1192L86
Dispensing	Single Syringe Dispenser	Basic	1220B14
		Advanced	1221W13
	Dual Syringe Dispenser	Basic	1221W11
		Advanced	1221W15
	Continuous Syringe Dispenser	Basic	1221W12
		Advanced	1221W16
	PC Controlled Single Syringe	-	1192L87
		-	1192L88

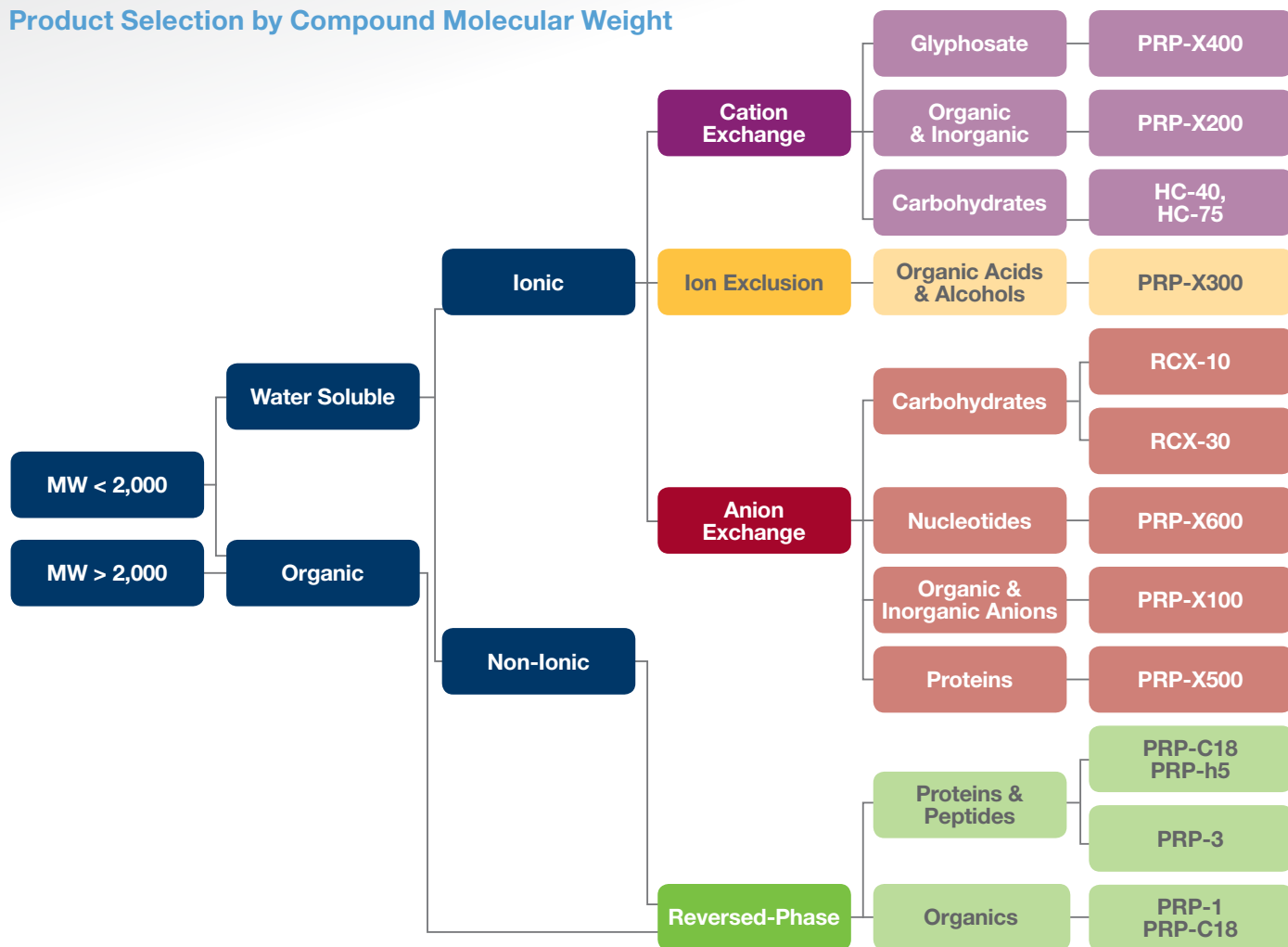


HPLC Columns

Hamilton offers a complete selection of polymer-based HPLC columns for reversed-phase, anion exchange, cation exchange, and ion exclusion as well as silica-based columns for reversed-phase.

Hamilton Polymer Column Product Selection Guide

Product Selection by Compound Molecular Weight



Featured Product: PRP-C18 Polymer-Based Columns

The Hamilton PRP-C18 is designed to provide high-efficiency, reversed-phase separations over an extended column life in nearly any mobile phase or pH. The PRP-C18 is a durable and effective column for general purpose HPLC and is especially well-suited for specialized applications in the clinical, pharmaceutical, environmental, food, forensics, and life sciences industries.

The properties of the PRP-C18 make it a superior column in the field of oligonucleotide purifications.



PRP-C18 Columns

ThomasSci Part No.	Particle Size	Hardware Inner Diameter	Hardware Length	Hardware Material
1192F39	5 µm	2.1 mm	150 mm	Stainless Steel
1192F46	5 µm	2.1 mm	150 mm	PEEK
1192F40	5 µm	2.1 mm	250 mm	Stainless Steel
1192F47	5 µm	2.1 mm	250 mm	PEEK
1192F38	5 µm	2.1 mm	50 mm	Stainless Steel
1192F45	5 µm	2.1 mm	50 mm	PEEK
1192F42	5 µm	4.6 mm	150 mm	Stainless Steel
1192F49	5 µm	4.6 mm	150 mm	PEEK
1192F43	5 µm	4.6 mm	250 mm	Stainless Steel
1192F50	5 µm	4.6 mm	250 mm	PEEK
1192F41	5 µm	4.6 mm	50 mm	Stainless Steel
1192F48	5 µm	4.6 mm	50 mm	PEEK
1192F44	12–20 µm	21.2 mm	250 mm	Stainless Steel



Find the Right HPLC Column for Your Application

Request a Printed Copy of Hamilton's HPLC Columns and Accessories Reference Guide at hamiltoncompany.com/reference-guides



Pipettes

We've learned that our best ideas come from listening to people working in the lab and using our products. Responding to user demand, we have developed our pipettes putting a priority on addressing the issues of hand strain, fatigue, and other injuries caused by pipettes. The result

is innovative designs that set new standards for quality, comfort, and precision. You'll feel the difference the first time you pick one up. Hamilton's line of SoftGrip™ pipettes are easy to use, reliable, and maximize the efficiency of your lab.

SoftGrip Pipettes

Outstanding Quality

The SoftGrip pipette, with its award-winning, innovative design, is built to last. SoftGrip manual pipettes are completely autoclavable for easy decontamination and sterilization. User may perform pipette calibration or the pipettes may be sent to Hamilton for calibration service.

Total Comfort

The soft, ergonomic shape and low plunger forces of the SoftGrip pipette reduce hand and wrist fatigue as compared to other pipettes. Using SoftGrip pipettes decreases the risk factors associated with pipette-related repetitive stress injuries such as carpal tunnel syndrome.



Adjustable Volume Pipettes

ThomasSci Part No.	Volume Range	Increments	Color
1230N51	0.2–2 µL	0.002 µL	Aqua
1230N52	1–10 µL	0.02 µL	Purple
1230N53	2.5–25 µL	0.02 µL	Forest Green
1230N54	10–100 µL	0.2 µL	Violet
1230N55	30–300 µL	0.2 µL	Brick Red
1230N56	100–1000 µL	2.0 µL	Sky Blue

Fixed Volume Pipettes

ThomasSci Part No.	Volume Range	Color
1230N41	5 µL	Steel Blue
1230N42	10 µL	Purple
1230N43	25 µL	Forest Green
1230N44	50 µL	Sandstone
1230N45	100 µL	Violet
1230N46	200 µL	Mustard
1230N47	250 µL	Burnt Orange
1230N48	300 µL	Brick Red
1230N49	500 µL	Olive Green
1230N50	1000 µL	Sky Blue

Multi-Channel Pipettes

ThomasSci Part No.	Volume Range	Channels	Color
1230N57	5–50 µL	8	Sandstone
1230N58	30–300 µL	8	Brick Red
1230N59	5–50 µL	12	Sandstone
1230N60	30–300 µL	12	Brick Red





Lab pH and ORP/Redox Electrodes

pH Electrodes

Hamilton process sensors and laboratory electrodes are precision instruments known worldwide for high quality, long lifetime, and remarkable performance in a wide range of applications. The sensors are designed to help with the daily work in GMP/GLP environments.

Hamilton pH electrode design offers many advantages:

- High-quality seal between electrode head and cable (IP 68)
- Blue inner buffer provides visual indication of contact with the pH membrane
- Proven electrolyte sealing system for the refill opening
- Ergonomic electrode head
- All electrodes are printed with an indelible serial number

pH Electrodes

Application	ThomasSci Part No.	Product Name	Description
General Use	1146J43	Liq-Glass pH Electrode	The Liq-Glass is a robust electrode for daily laboratory use, ideally suited for titrations with strong acids as well as in strong bases.
	1146J73	Single Pore pH Electrode	Using Hamilton's patented Single Pore design, the Single Pore Glass has the highest accuracy and fastest response time. Widely applicable, it is great for use in emulsions, ion-weak media, or general laboratory applications.
	Multiple Options (See Full Catalog)	Polilyte Lab pH Electrode	Polilyte Lab electrodes offer the advantage of being maintenance-free with the accuracy and stability required by laboratory electrodes. Thanks to the Single Pore, clogging of the diaphragm is virtually impossible.
	1146J65	FlushTrode pH Electrode	The FlushTrode is ideally suited for viscous, ion-weak, and proteinaceous media. The sleeve diaphragm allows for measurements to be made in tough applications where other pH electrodes cannot.

pH Electrodes (Cont.)

Application	ThomasSci Part No.	Product Name	Description
General Use	1146J58	SlimTrode pH Electrode	The SlimTrode has a slim, 6 mm shaft diameter which allows measurements anywhere in the lab—even in test tubes with strong acids.
	1146J70	FillTrode pH Electrode	The FillTrode is a robust pH electrode with a plastic shaft and a flat membrane. Use this electrode for your toughest applications!
	1146J38	Gel Glass pH Electrode	The Gel-Glass is a maintenance-free electrode with excellent value, and well suited for everyday applications.

ORP Electrodes

Hamilton's combination Redox (ORP) electrodes are universally applicable and offer long term stability with the patented EVEREF technology. As with all other lab electrodes these sensors are individually serialized and certified.

ORP Electrodes

ThomasSci Part No.	Product Name	Description
1146J67	Liq-Glass ORP Electrode	The Liq-Glass is a robust ORP electrode for daily laboratory use. The electrode can be used in strong acids as well as in strong bases.
Multiple Options (See Full Catalog)	Polyplast ORP Electrode	The Polyplast ORP is an ORP electrode with a shatterproof plastic shaft ideal for portable measurement. It is an excellent sensor for measurement in water and sewage.

pH Buffers

Hamilton DuraCal pH buffers consist of a complete range of patented stable pH buffer solutions from pH 1.09 to 12.00. Hamilton guarantees that they last for five years from the date of manufacture.





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