

Syringes

Autosampler Syringes

Hamilton Syringes for Agilent/HP 7673 and 7683 Autosamplers

Hamilton autosampler syringes are available in three different needle gauge styles to suit your particular application. They are constructed of narrow-bore stainless steel to minimize liquid dead volume, and have a special conical point that reduces the pressure needed to penetrate the autosampler septum.

- 23s gauge needles for standard injections.
- 26s gauge needles for on-column and split/splitless injections.
- 23s-26s dual gauge needles allow you to perform all your applications without the need to change syringes.

Hamilton Microliter Syringes

Glass barrel with fitted stainless steel plunger.

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				AGILENT EQUIV.	CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.	QTY.				CAT. NO.	PRIC	
FIXED NEEDLE SYRINGES											
5µL	75 ASN	23s	43mm	#1	9301-0892	21311		—	—	—	
5µL	75 ASN, 6 pk.	23s	43mm	#1	5182-0875	21315		—	—	—	
5µL	75 ASN	26s	43mm	#1	5183-4728	21310-U		—	—	—	
5µL	75 ASN, 6 pk.	26s	43mm	#1	5183-4728	21314		—	—	—	
5µL	75 ASN	23s-26s	43mm	#1	5181-1273	24570-U		—	—	—	
5µL	75 ASN, 6 pk.	26s-26s	43mm	#1	5181-8810	24571		—	—	—	
10µL	701 ASN	23s	43mm	#1	9301-0713	21313		—	—	—	
10µL	701 ASN, 6 pk.	23s	43mm	#1	9301-0725	21317		—	—	—	
10µL	701 ASN	26s	43mm	#1	9301-0714	21312		—	—	—	
10µL	701 ASN, 6 pk.	26s	43mm	#1	5183-4729	21316		—	—	—	
10µL	701 ASN	23s-26s	43mm	#1	5181-1267	24573		—	—	—	
10µL	701 ASN, 6 pk.	23s-26s	43mm	#1	5181-3360	24574		—	—	—	
REMOVABLE NEEDLE SYRINGES											
5µL	75 ASRN	23s	43mm	#1	5182-0834	21321		3	21327-U		
5µL	75 ASRN	26s	43mm	#1	—	21320-U		3	21326		
5µL	75 ASRN	23s-26s	43mm	#1	5182-0835	24572		3	24582		
10µL	701 ASRN	23s	43mm	#1	5181-8806	21323-U		3	21327-U		
10µL	701 ASRN	26s	43mm	#1	—	21322-U		3	21326		
10µL	701 ASRN	23s-26s	43mm	#1	5181-3321	24575		3	24582		

Hamilton Modified Microliter Syringes

Sample is contained in the needle.

CAPACITY	MODEL	NEEDLE SPECIFICATIONS			AGILENT EQUIV.	CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.				QTY.	CAT. NO.	PRIC
KNURLED HUB SYRINGES WITH REMOVABLE NEEDLE										
0.5µL	7000.5 ASRN	23s	43mm	#1	—	26214		—	—	—
0.5µL	7000.5 ASRN	26s	43mm	#1	—	26215		—	—	—
1µL	7001 ASRN	23s	43mm	#1	—	26216		—	—	—
1µL	7001 ASRN	26s	43mm	#1	—	26217		—	—	—

Hamilton Microliter Syringes – Special Needle*

Glass barrel with fitted stainless steel plunger. The needle has a special 22° bevel.

Repair Kit for Hamilton 7000.5 ASRN Syringes

The kit contains a Needle, plunger wire, ferrule, and instruction sheet. This Repair Kit is for Supelco Cat. No. 26215.

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE	DESCRIPTION	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES							26s Gauge Kit for 7000.5 ASRN	26747-U	
5µL	75 ASN	23s	43mm	#2	26714				
5µL	75 ASN	26s	43mm	#2	26721				
10µL	701 ASN	23s	43mm	#2	26715				
10µL	701 ASN	26s	43mm	#2	26722				

* Do not use these syringes with Merlin Microseal septa.

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Syringes Autosampler Syringes

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Hamilton Gastight Syringes

Glass barrel with a Teflon-tipped plunger seal.

CAPACITY	MODEL	NEEDLE SPECIFICATIONS					PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.	AGILENT EQUIV.	CAT. NO.		QTY.	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES										
5µL	175 ASN	23s	43mm	#1	—	26716	—	—	—	—
5µL	175 ASN, 6 pk.	23s	43mm	#1	—	26700-U	—	—	—	—
5µL	175 ASN, 6 pk.	23s-26s	43mm	#1	—	24577	—	—	—	—
10µL	1701 ASN	23s	43mm	#1	5181-8809	26719	—	—	—	—
10µL	1701 ASN, 6 pk.	23s	43mm	#1	—	26701	—	—	—	—
10µL	1701 ASN	23s-26s	43mm	#1	5181-3354	24579	—	—	—	—
10µL	1701 ASN, 6 pk.	23s-26s	43mm	#1	5181-3361	24580	—	—	—	—
REMOVABLE NEEDLE SYRINGES										
5µL	175 ASRN	23s	43mm	#1	—	26718	3	21327-U	—	—
5µL	175 ASRN	23s-26s	43mm	#1	—	24578	3	24582	—	—
10µL	1701 ASRN	23s	43mm	#1	5181-8813	21325-U	3	21327-U	—	—
10µL	1701 ASRN	26s	43mm	#1	—	21324	3	21326	—	—
10µL	1701 ASRN	23s-26s	43mm	#1	5181-3356	24581	3	24582	—	—



SGE Syringes for Agilent/HP 7673 and 7683 Autosamplers

SGE syringes are designed and tested to meet critical autosampler specifications. These syringes are designed with a unique plunger to eliminate bending and seizing. The needle point style withstands multiple and fast septum injections, making it one of the best free autosampler syringes available.

		NEEDLE SPECIFICATIONS				REPLACEMENT NEEDLES			
CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE	QTY.	CAT. NO.	PRICE
STANDARD SYRINGE, FIXED NEEDLE									
5µL	5F-HP-0.47	26	42mm	#1	21910		—	—	—
5µL	5F-HP-0.63	23	42mm	#1	21542		—	—	—
5µL	SK-5F-HP-0.63, 6 pack	23	42mm	#1	21911		—	—	—
5µL	5F-HP-0.63/0.47	23s-26s	42mm	#1	26887-U		—	—	—
10µL	10F-HP-0.47	26	42mm	#1	21541		—	—	—
10µL	SK-10F-HP-0.47, 6 pack	26	42mm	#1	21912		—	—	—
10µL	10F-HP-0.63	23	42mm	#1	21543		—	—	—
10µL	SK-10F-HP-0.63, 6 pack	23	42mm	#1	21544		—	—	—
10µL	10F-HP-0.63/0.47	23s-26s	42mm	#1	26889-U		—	—	—
STANDARD SYRINGE, REMOVABLE NEEDLE									
0.5µL	0.5BR-HP-0.47	26	42mm	#1	24402		1	24426	
0.5µL	0.5BR-HP-0.63	23	42mm	#1	24403		1	24427	
10µL	10R-HP-0.47	26	42mm	#1	24417		2	24440-U	
10µL	10R-HP-0.63	23	42mm	#1	24416		2	24439	
25µL	25R-HP-0.63	23	42mm	#1	509701		2	509728	
GAS TIGHT SYRINGE, FIXED TAPERED NEEDLE									
10µL	10R-HP-GT-0.47	26	42mm	#1	509671		—	—	—
10µL	10F-HP-GT-0.63/0.47	23s-26s	42mm	#1	26890-U		—	—	—
10µL	10F-HP-GT-0.63/0.47, 6 pk.	23s-26s	42mm	#1	26891-U		—	—	—
25µL	25F-HP-GT-0.63/0.47	23s-26s	42mm	#1	26892-U		—	—	—
50µL	50F-HP-GT-0.63/0.47	23s-26s	42mm	#1	26893-U		—	—	—
100µL	100F-HP-GT-0.63/0.47	23s-26s	42mm	#1	26894-U		—	—	—
SUPERFLEX SYRINGE, FIXED NEEDLE									
10µL	10FX-HP-0.47	26	42mm	#1	23957-U		—	—	—
10µL	10FX-HP-0.63	23	42mm	#1	23956		—	—	—
10µL	SK-10FX-HP-0.47, 6 pack	26	42mm	#1	23971		—	—	—
10µL	SK-10FX-HP-0.63, 6 pack	23	42mm	#1	23972		—	—	—
SUPERFLEX SYRINGE, REMOVABLE NEEDLE									
5µL	5RX-HP-0.47	26	42mm	#1	23963		2	23977	
5µL	5RX-HP-0.63	23	42mm	#1	23962		—	—	—
10µL	10RX-HP-0.47	23	42mm	#1	23959		2	24440-U	
10µL	10RX-HP-0.63	26	42mm	#1	23958		2	24439	

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Vials & Syringes

SUPELCO

Syringes

Autosampler Syringes

Hamilton Syringes for Agilent/HP 7670, 7671, and 7672 Autosamplers

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.	CAT. NO.		QTY.	CAT. NO.	PRICE
MICROLITER SYRINGE									
10µL	701N	26s	43mm	#2	20734	—	—	—	
10µL	701N, 6 pk.	26s	43mm	#2	20779	—	—	—	
10µL	701RN-HP	26s	43mm	#2	21357	3	20760-U		
1µL	700 1KH	25s	70mm	#2	20750	—	—	—	
GASTIGHT SYRINGE (WITH TEFLON-TIPPED PLUNGER)									
10µL	1701 N	26s	43mm	#2	20972	—	—	—	
10µL	1701 RN-HP	26s	43mm	#2	26727	3	20760-U		

SGE Syringes for Agilent/HP 7670, 7671, and 7672 Autosamplers

CAPACITY	MODEL	NEEDLE SPECIFICATIONS			CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.			QTY.	CAT. NO.	PRICE
1µL	1BR-FV-56	23	56mm	#2	24409		1	24433	

Hamilton Syringes for Perkin-Elmer Integral 4000 HPLC Autosampler

CAPACITY	MODEL	NEEDLE SPECIFICATIONS			CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.			QTY.	CAT. NO.	PRICE
100µL	1710 T/PE	—	—	—	24525		—	—	—
250µL	1725 T/PE	—	—	—	24526-U		—	—	—
500µL	1750 T/PE	—	—	—	24527		—	—	—

Hamilton Syringes for Perkin-Elmer GC Autosystem

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.	CAT. NO.		QTY.	CAT. NO.	PRICE
MICROLITER SYRINGE, FIXED NEEDLE									
5µL	75 ASN/PE	26s	70mm	#3	24522	—	—	—	
5µL	75 ASN/PE	23s	70mm	#3	24523	—	—	—	
MICROLITER SYRINGE, REMOVABLE NEEDLE									
0.5µL	7000.5 ASRN/PE	26s	70mm	#3	24520-U	—	—	—	
0.5µL	7000.5 ASRN/PE	23s	70mm	#3	24521	—	—	—	

SGE Syringes for Perkin-Elmer AS100, AS2000, and AS3000 GC Autosystems

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	PT.	CAT. NO.		QTY.	CAT. NO.	PRICE
STANDARD SYRINGE, REMOVABLE NEEDLE									
0.5µL	0.5BR-PE-0.47	26	70mm	#1	24406	—	—	—	
0.5µL	0.5BR-PE-0.63	23	70mm	#1	24407	1	24431	—	
STANDARD SYRINGE, FIXED NEEDLE									
5µL	5F-PE-0.47	26	70mm	#1	509736	—	—	—	
5µL	5F-PE-0.63	23	70mm	#1	509744	—	—	—	
GAS TIGHT SYRINGE, FIXED NEEDLE									
5µL	5F-PE-GT-0.47	26	70mm	#1	21930-U	—	—	—	
5µL	5F-PE-GT-0.63	23	70mm	#1	21929-U	—	—	—	

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Hamilton Syringes for CTC/Leap Technologies Autosamplers

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE	CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
GC SAMPLING: A200S, PAL INSTRUMENTS							HPLC SAMPLING: HTS PAL INSTRUMENTS						
Modified Microliter							Microliter Syringe, Fixed Needle						
1.2µL	7701.2	26p	51mm	#1	28617-U		10µL	701N	22s	51mm	#3	28618-U	
Microliter Syringe, Fixed Needle							Gastight Syringe						
5µL	75N	26s	51mm	#1	28613-U		10µL	1701N	22s	51mm	#3	28632-U	
10µL	701N	26s	51mm	#2	28614-U		25µL	1702N	22s	51mm	#3	28633-U	
10µL	701N	26s	51mm	#1	28615-U		100µL	1710N	22s	51mm	#3	28634-U	
Gastight Syringe, Fixed Needle							100µL	1710N	22	51mm	#3	28635-U	
25µL	1702N	26s	51mm	#1	28649-U		250µL	1725N	22	51mm	#3	28636-U	
100µL	1710N	26s	51mm	#1	28651-U		1mL	1001LTN	22	56mm	#3	28637-U	
250µL	1725N	26s	51mm	#1	28652-U		2.5mL	1002LTN	22	56mm	#3	28638-U	
500µL	1750N	26s	51mm	#1	28653-U		5mL	1005LTN	22	56mm	#3	28639-U	
GC HEADSPACE SAMPLING: COMBI PAL							Replacement Plungers						
Gastight Syringe							MODEL	DESCRIPTION		CAT. NO.	PRICE		
1mL	1000LTN	23	56mm	#5	28621-U		1701CTC	for 10µL CTC Syringe		28641-U			
1mL	1001LTN	26	56mm	#5	28622-U		1702CTC	for 25µL CTC Syringe		28642-U			
2.5mL	1002LTN	23	56mm	#5	28626-U		1710CTC	for 100µL CTC Syringe		28643-U			
2.5mL	1002LTN	26	56mm	#5	28627-U		1725CTC	for 250µL CTC Syringe		28644-U			
5mL	1005LTN	23	56mm	#5	28628-U		1750CTC	for 500µL CTC Syringe		28645-U			
5mL	1005LTN	26	56mm	#5	28629-U		1001CTC	for 1mL CTC Syringe		28646-U			
							1002CTC	for 2.5mL CTC Syringe		28647-U			
							1005CTC	for 5mL CTC Syringe		28648-U			

SGE Syringes for Other Autosamplers

CAPACITY		MODEL	NEEDLE SPECIFICATIONS				REPLACEMENT NEEDLES			
			GAUGE	LENGTH	PT.	CAT. NO.	PRICE	QTY.	CAT. NO.	PRICE
SYRINGES FOR GENERAL USE										
SuperflexX Syringe, fixed needle										
10µL	10FX, 6 pack		26	50mm	#2	23966		—	—	—
SuperflexX Syringe, removable needle										
10µL	10RX		26	50mm	#2	23967		5	24437	
SYRINGE FOR PHILLIPS/UNICAM S8 AND 4700 GC AUTOSYSTEM										
1µL	1BR-7		23	70mm	#1	24408		1	24432	
SYRINGES FOR SHIMADZU AOC14, AOC17 AND AOC20 GC AUTOSAMPLERS										
10µL	10R-S-0.47		26			24418		—	—	—
10µL	10R-S-0.63		23			24419		2	24442	
SYRINGES FOR SHIMADZU AOC9 GC AUTOSAMPLER										
5µL	0.5BR-S(9)-0.47		26	50mm	#1	509752		—	—	—
10µL	0.5BR-S(9)-0.63					509760		—	—	—
SYRINGE FOR VARIAN 8000 GC AUTOSAMPLER										
10µL	10R-VA80-11		25	50mm	#6 ■	24420-U		2	24443	
SYRINGE FOR VARIAN 8035, 8100, AND 8200 GC AUTOSAMPLERS										
1µL	1BR-VA8X*		26	51mm	#1	24410-U		1	24434	
10µL	10R-VA8X-11		25	53mm	#5	24421		See needles below		
REPLACEMENT NEEDLES AND PLUNGERS										
For 10R-VA8X, 8035: Beveled tip, 25 gauge, 53mm length, point #2								2	24444	
For 10R-VA8X,8035: On-column, domed tip, 105mm length, 0.17mm OD								2	24446	
For 10R-VA8X, 8100, 8200: Side hole, 25 gauge, 53mm length, point #5								1	24445	
Spare plungers for Varian 10µL Syringes								1	21924	

■ Domed tip.

* Not suitable for Varian 8200 GC Autosampler.

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Vials & Syringes

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Syringes

GC Syringes

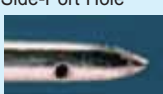


DESCRIPTION OF GAUGE SIZES

Gauge	OD x ID	Length	Dead Volume
26s	0.019 x 0.005 in.	2"	0.52µL
26	0.018 x 0.010 in.	2"	2.5µL
25s	0.020 x 0.006 in.	1.97"	1.26µL
22s	0.028 x 0.006 in.	2"	0.9µL
22	0.028 x 0.016 in.	2"	6.7µL

SPECIFICATIONS FOR SYRINGE NEEDLES

DESCRIPTION OF POINT STYLES

Point Style	General Information
#1 – Cone Tip 	Recommended for use with pre-drilled septa. The shape of this needle has been developed for multi-injections on the Agilent/HP 7673A autosampler.
#2 – Bevel Tip 	The bevel tip (22° on Hamilton syringes, 20° on SGE syringes) is designed for optimum septum penetration and to prevent septum coring.
#3 – 90° Blunt Tip 	The 90° blunt tip has chamfered and polished edges that eliminate damage to the valve's rotor seal and stator face. This style also can be used for pipetting of liquids.
#5 – Cone Tip, Side-Port Hole 	Liquid samples can be filled and dispensed through the side hole, and septum damage is minimized by the solid domed tip.

9950106, 107, 109, 108

SELECTING HAMILTON SYRINGES

IF YOU WANT REPRODUCIBLE INJECTIONS AT AN ECONOMICAL PRICE:

Choose a fixed needle syringe (N or LTN suffix). N denotes an epoxy-cemented 304 stainless steel needle inserted in the syringe barrel to a depth corresponding exactly to the zero graduation. LTN denotes a cemented Luer tip needle. Fixed needle syringes should not be heated above 50°C.

IF YOU LIKE THE SIMPLICITY OF A FIXED NEEDLE SYRINGE, BUT WANT TO REPLACE DAMAGED NEEDLES, OR CHANGE GAUGES TO SUIT YOUR APPLICATIONS:

Select a syringe with a removable needle (RN). RN syringes allow easy replacement of damaged needles in the field. The needle seats to the zero graduation mark, providing the same characteristics as cemented needles. RN syringes should not be heated above 115°C.

IF YOU NEED A KNURLED HUB:

A knurled hub (KH) syringe creates a leak-tight seal between barrel and needle and may be retightened to compensate for wear. The male Luer accommodates a spacer for defined depth insertions. Exclusive to Series 7000 syringes.

IF YOU WANT AN AUTOCLAVABLE SYRINGE WITH EASY, FAST NEEDLE REPLACEMENT:

Choose a syringe with a Luer tip (LT). LT denotes a ground glass Luer tip suitable for mounting chromatographic and Teflon needles. Order needles separately. Metal hubbed needles are not recommended. LT syringes can be autoclaved at 121°C. Remove the plunger during sterilization.

IF YOU LIKE THE LUERTYPE NEEDLE ATTACHMENT, BUT NEED THE SECURITY OF A LOCKED NEEDLE ATTACHMENT:

It is available with Teflon Luer lock syringes (TLL). Teflon Luer lock has a screwable Teflon center male Luer to hold your needle tightly in place. TLL used with 1000 Series provides an essentially inert syringe. Order needles separately. Metal or PCTFE hubbed needles can be used. Syringes with TLL connections should not be heated above 50°C.

IF YOU HAVE PROBLEMS WITH BENT PLUNGERS:

Plunger guides (WG suffix) reduce the expense of replacing or repairing syringes with bent plungers. Especially useful on syringes with small diameter plungers.

IF YOU REQUIRE PRECISE CONTROL OF SAMPLE SIZES:

Chaney adapters (CH suffix) ensure consistent sample delivery. You will know the sample size is right every time.

NOTE:

Hamilton uses the most chemically resistant adhesive available to cement the needles into these syringes. Prolonged contact with some solvents, however, can cause the adhesive to deteriorate. After making your injections, thoroughly rinse the syringe with distilled water and allow it to air dry. Do not soak your syringe with any solvent for more than three minutes. In cases where prolonged use of strong solvents is necessary, you may wish to use an RN syringe.

Syringes

Hamilton Microliter Syringes

600 Series

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
RNR (REMOVABLE NEEDLE)						
2.5μL	62RNR	22s	50mm	#3	26702 *	
5.0μL	65RNR	22s	50mm	#3	26703 *	

700 Series

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
N (CEMENTED NEEDLE)						

5μL	75	26s	2"	#2	26200-U	
10μL	701	26s	2"	#2	20734	
25μL	702	22s	2"	#2	20735	
50μL	705	22s	2"	#2	20736	
100μL	710	22s	2"	#2	20737	
250μL	725	22s	2"	#2	20738	
500μL	750	22	2"	#2	20739	

SN (SPECIAL NEEDLE)						
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10μL	701	26s	2"	#3	20682	
10μL	701	22s	2"	#3	58380-U *	
10μL	701	26s	3"	#2 **	21572	
10μL	701	26s	4"	#2 **	21573	
10μL	701	26s	6"	#2 **	21574	
25μL	702	22s	2"	#3	58381 *	
50μL	705	22s	2"	#3	58382 *	
100μL	710	22s	2"	#3	58383 *	
250μL	725	22	2"	#3	58384 *	

NWG (CEMENTED NEEDLE WITH GUIDE)						
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10μL	701	26s	2"	#2	20753	
25μL	702	22s	2"	#2	20754	

NCH (CEMENTED NEEDLE WITH CHANEY ADAPTER)						
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10μL	701	26s	2"	#2	20747	
100μL	710	22s	2"	#2	24541-U	
250μL	725	22s	2"	#2	24542	

RN (REMOVABLE NEEDLE)						
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5μL	75	26s	2"	#2	20919	
10μL	701	26s	2"	#2	20697	
25μL	702	22s	2"	#2	20787	
50μL	705	22s	2"	#2	20788	
100μL	710	22s	2"	#2	20790-U	
250μL	725	22s	2"	#2	24538-U	
500μL	750	22s	2"	#2	24539	

RNWG (REMOVABLE NEEDLE WITH GUIDE)						
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10μL	701	26s	2"	#2	20698	
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RNCH (REMOVABLE NEEDLE WITH CHANEY ADAPTER)						
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10μL	701	26s	2"	#2	20699	
25μL	702	22s	2"	#2	24543	

SN (USE WITH MERLIN MICROSEAL, MANUAL INJECTION)						
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10μL	701	23s	1.71"	#1	26228	
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LT (LUER TIP)***						
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10μL	701	—	—	—	24530	
25μL	702	—	—	—	24531	
50μL	705	—	—	—	20701	
100μL	710	—	—	—	20702	
250μL	725	—	—	—	20703	
500μL	750	—	—	—	20704	

Npt5 (CEMENTED NEEDLE)						
------------------------	--	--	--	--	--	--

10μL	701	26s	—	#5	24532	
25μL	702	22s	—	#5	24533-U	
50μL	705	22s	—	#5	24534-U	
100μL	710	22s	—	#5	24535	
250μL	725	22s	—	#5	24536	
500μL	750	22	—	#5	24537	

* For Rheodyne injectors.

** Electrotaper.

*** Not supplied with needle.

NEEDLE TYPE	
N (Cemented Needle)	
SN (Special Needle)	
NWG (Cemented Needle with Guide)	
NCH (Cemented Needle with Chaney Adapter)	
RN (Removable Needle)	
RNWG (Removable Needle with Guide)	
RNCH (Removable Needle with Chaney Adapter)	
LT (Luer Tip)	
NPT5 (Cemented Needle Point #5)	
713-0583, 0585, 713-0589, 0590, 0584, 0592, 794-0823, 713-0585, 794-0824	

SAVE When You Order in Six Packs



700 Series Six Packs

The most popular syringes are available in convenient multi-unit packages, at considerable cost-savings. Accurate to $\pm 1\%$. Temperature limit: 50° C for cemented needles, 115° C for removable needle.

10μL capacity, 26s gauge, 50mm length, point style #2, in packs of 6.

MODEL	CAT. NO.	PRICE
701N	20779	
701RN	20793	

Order: 1.800.325.3610 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Vials & Syringes

SUPELCO

Syringes

Hamilton Microliter Syringes

800 Series

- Same quality performance as 700 series, with additional benefits
- The extended metal handle is removable and field repairable
- The plunger stem resists bending
- Accurate to within $\pm 1\%$ of the total volume
- Temperature limit: 50°C for cemented needles, 115°C for removable needle

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
N (CEMENTED NEEDLE)						

5μL	85	26s	2"	#2	20835-U	
10μL	801	26s	2"	#2	20795-U	
25μL	802	22s	2"	#2	21492	
50μL	805	22s	2"	#2	24544	
100μL	810	22s	2"	#2	21497-U	
250μL	825	22s	2"	#2	24545-U	

RN (REMOVABLE NEEDLE)

5μL	85	26s	2"	#2	26201	
10μL	801	26s	2"	#2	20797	
25μL	802	22s	2"	#2	21493	
50μL	805	22s	2"	#2	21496	
100μL	810	22s	2"	#2	21498	
250μL	825	22s	2"	#2	24546	

RN MULTIPACK (5 SYRINGE SIZES)

10-250μL	800 series	26s	2"	#2	21489	
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WATERS RN SYRINGES

10μL	801	25s	1.97"	#3	58390-U	
25μL	802	25s	1.97"	#3	58391	
50μL	805	25s	1.97"	#3	58392	
100μL	810	25s	1.97"	#3	58393	
250μL	825	25s	1.97"	#3	58394	



Replacement Barrel Assemblies For 800 Series Syringes

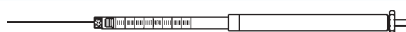
CAPACITY	MODEL	CAT. NO.	PRICE
5μL	85N	20836	
10μL	801N	20837	
10μL	801RN	20838-U	

NEEDLE TYPE

N (Cemented Needle)



RN (Removable Needle)



7940704, 7940705



900 Series

Economical version of 800 series syringes.

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
N (CEMENTED NEEDLE)						

5μL	95	26s	2"	#2	20906-U	
10μL	901	26s	2"	#2	20908-U	

RN (REMOVABLE NEEDLE)

5μL	95	26s	2"	#2	20907-U	
10μL	901	26s	2"	#2	20909-U	



Needles for RN Syringes

CAPACITY	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
POINT #2 - BEVEL TIP					

2.5μL-100μL	26s	2"	#3	20760-U	
2.5μL-100μL	22s	2"	#3	20761	
250μL-10mL	22s	2"	#3	20798	
250μL-10mL	22	2"	#3	20799	

POINT #3 - BLUNT TIP

2.5μL-100μL	25s	1.97"	#3	58398	
250μL-10mL	25s	1.97"	#3	58399	

1000 Series Gastight

- For larger volumes
- Teflon plunger tip gives an inert, leak-tight seal for corrosive gases and liquids, radioactive materials, and sterile solutions
- Accurate to within $\pm 1\%$ of the total volume
- Temperature limit 115°C for removable needle

VOLUME	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
RN (REMOVABLE NEEDLE)						

1mL	1001	22	2"	#2	22192-U	
2.5mL	1002	22	2"	#2	22193-U	
5.0mL	1005	22	2"	#2	22194-U	
10.0mL	1010	22	2"	#2	22195	

LT (LUER TIP)*						
1.0mL	1001	—	—	—	20720	
1.25mL	1001.25	—	—	—	24588	
2.5mL	1002	—	—	—	20721	
5.0mL	1005	—	—	—	20722	
10.0mL	1010	—	—	—	20723	

LTN (FIXED NEEDLE)**						
1.0mL	1001	22	2"	#2	20740-U	
1.25mL	1001.25	22	2"	#2	24589	
2.5mL	1002	22	2"	#2	20691	
5.0mL	1005	22	2"	#2	20692	
10.0mL	1010	22	2"	#2	20693	

LTNpt5 (FIXED NEEDLE)***, SIDE PORT						
1.0mL	1001	22	2"	#5	20709	
2.5mL	1002	22	2"	#5	20710-U	
5.0mL	1005	22	2"	#5	24590	
10.0mL	1010	22	2"	#5	24591	

TLL (TEFLON LUER LOCK)*						
1.0mL	1001	—	2"	#2	20997	
1.0mL w/slots	1001	—	2"	#2	26208	
2.5mL	1002	—	2"	#2	20998	
2.5mL w/slots	1002	—	2"	#2	26209	
5.0mL	1005	—	2"	#2	20999	
5.0mL w/slots	1005	—	2"	#2	26210-U	
10.0mL	1010	—	2"	#2	21000-U	
10.0mL w/slots	1010	—	2"	#2	26211-U	
25.0mL	1025	—	2"	#2	20683	
25.0mL w/slots	1025	—	2"	#2	26212	
50.0mL	1050	—	2"	#2	20707	
50.0mL w/slots	1050	—	2"	#2	26213	
100.0mL	1100	—	2"	#2	21967	

*Not supplied with needle.

** LT style with cemented needle.

NEEDLE TYPE

RN (Removable Needle)



LT (Luer Tip)*



LTN (Fixed Needle)**



LTNpt5 (Fixed Needle Point #5)**



TLL (Teflon Luer Lock)* – 1mL to 10mL



TLL (Teflon Luer Lock)* – 25mL to 100mL



7130584, 0585, 0587, 0587, 0586, 7940706



Syringes

Hamilton Gastight Syringes

Sample Lock Syringes (SL)

- Twist valve locks the sample in the syringe
- Positive rear plunger stop eliminates sample loss and plunger blowout at high pressures
- Connects to either male or female Luer fittings
- Internal standards can be added through the valve port into the sample contained in the syringe



Sample Lock Syringes

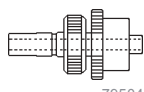
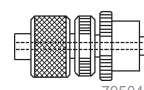
VOLUME	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
SL (SAMPLE LOCK)						
50µL	1705SL	22s	2"	#2	26280-U	
100µL	1710SL	22s	2"	#2	26281	
250µL	1725SL	22s	2"	#2	26282	
500µL	1750SL	22	2"	#2	26283	
1.0mL	1001SL	22	2"	#2	26284	
2.5mL	1002SL	22	2"	#2	26285	
5.0mL	1005SL	22	2"	#2	26286	
10.0mL	1010SL	22	2"	#2	26287	
25.0mL	1025SL	22	2"	#2	26288	
50.0mL	1050SL	22	2"	#2	26289	
100.0mL	1100SL	22	2"	#2	26290-U	

Sample Lock Syringe Replacement Needles / Plunger Assemblies

VOLUME	MODEL	REPLACEMENT NEEDLE CAT. NO.	PLUNGER ASSY.* PRICE	CAT. NO.	PRICE
50µL	1705SL	20798		26152-U	
100µL	1710SL	20798		26154	
250µL	1725SL	20798		—	—
500µL	1750SL	20799		—	—
1.0mL	1001SL	20799		—	—
2.5mL	1002SL	20799		—	—
5.0mL	1005SL	20799		—	—
10.0mL	1010SL	20799		—	—
25.0mL	1025SL	20799		—	—
50.0mL	1050SL	20799		—	—
100.0mL	1100SL	20799		—	—

* PLEASE NOTE Plunger Assy. for sample lock syringes are not the same as Plunger Assy. for other 1000 and 1700 series syringes.

Luer Fittings for Sample Lock Syringes

DESCRIPTION	CAT. NO.	PRICE
Male Luer/Removable Needle Hub	26292	
 7950469		
Male Luer Lock/Removable Needle Hub	26293	
 7950470		

1700 Series Gastight Syringes

VOLUME	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
N (CEMENTED NEEDLE)						
10µL	1701	26s	2"	#2	20972	
25µL	1702	22s	2"	#2	20973	
50µL	1705	22s	2"	#2	20687	
100µL	1710	22s	2"	#2	20688	
250µL	1725	22s	2"	#2	20689	
LTN (CEMENTED NEEDLE)**						
500µL	1750	22	2"	#2	20690-U	
Npt5 (CEMENTED NEEDLE POINT #5)						
10µL	1701	26s	2"	#5	24585	
25µL	1702	22s	2"	#5	24586	
250µL	1725	22s	2"	#5	20705	
500µL	1750	22	2"	#5	20708	
RN (REMOVABLE NEEDLE)						
10µL	1701	26s	2"	#2	20780-U	
25µL	1702	22s	2"	#2	20781	
50µL	1705	22s	2"	#2	20782	
100µL	1710	22s	2"	#2	20783	
250µL	1725	22s	2"	#2	20784	
500µL	1750	22	2"	#2	20785-U	
LT (LUER TIP)***						
10µL	1701	—	—	—	20976	
25µL	1702	—	—	—	20977	
50µL	1705	—	—	—	20715	
100µL	1710	—	—	—	20716	
250µL	1725	—	—	—	20717	
500µL	1750	—	—	—	20714	
TLL (TEFLON LUER LOCK)***						
50µL	1705	—	—	—	26202	
50µL ****	1705	—	—	—	26204	
100µL	1710	—	—	—	26203	
100µL ****	1710	—	—	—	26205	
250µL	1725	—	—	—	20915	
250µL ****	1725	—	—	—	26206	
500µL	1750	—	—	—	20916	
500µL ****	1750	—	—	—	26207	

** LT style with cemented needle.

*** Not supplied with needle.

**** with slots

NEEDLE TYPE

N (Cemented Needle)



Npt5 (Cemented Needle Point #5), Side port



RN (Removable Needle)



LT (Luer Tip)



TLL (Teflon Luer Lock)



7130583, 7940824, 7130584, G000522, 7130586, 7130585

Syringes

Hamilton Gastight Syringes

1800 Series Gastight

- Ideal for corrosive, radioactive, or sterile materials
- Removable handle minimizes heat transfer from hand to sample, making the syringe easy to hold
- Accurate and reproducible to $\pm 1\%$
- Field repairable



VOLUME	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
N (CEMENTED NEEDLE)						

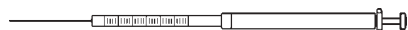
10 μ L	1801	26s	2"	#2	21390	
25 μ L	1802	22s	2"	#2	21391	
50 μ L	1805	22s	2"	#2	21392	
100 μ L	1810	22s	2"	#2	21393	
250 μ L	1825	22s	2"	#2	21394	

RN (REMOVABLE NEEDLE)

10 μ L	1801	26s	2"	#2	21395	
25 μ L	1802	22s	2"	#2	21396	
50 μ L	1805	22s	2"	#2	21397	
100 μ L	1810	22s	2"	#2	21398	
250 μ L	1825	22s	2"	#2	21399	

NEEDLE TYPE

N (Cemented Needle)



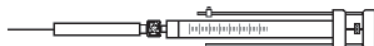
RN (Removable Needle)



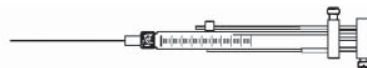
KH (Knurled Hub)



KHWG (Knurled Hub with Guide)



KHCH (Knurled Hub with Chaney Adapter)



7940704, 7940705, 7940707, G000523, 7940708

7000 Series Modified Microliter

- Rapid injection of minute volumes
- Eliminates dead volume by placing the sample in the needle
- Leak-proof at injection pressures up to 6000psi

7000 SERIES NEEDLE SPECIFICATIONS

Needle Specifications	Syringe Capacity and Model				
	0.5 μ L 7000.5	1 μ L 7001	1 μ L 7101	2 μ L 7002	5 μ L 7105
Gauge	25	25s	22s	25	24
Length (cm)	7	7	7	7	7
OD (in.)	0.020	0.019	0.028	0.020	0.022
ID (in.)	0.004	0.006	0.006	0.008	0.013
Taper (in.)	none	0.019	none	0.020	none

VOLUME	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
KH (KNURLED HUB)						

0.5 μ L	7000.5	25	70mm	#2	22185-U	
0.5 μ L	7000.5	25	70mm	#3	22184-U	
1.0 μ L	7001	25s	70mm	#2	20750	
1.0 μ L	7001	25s	70mm	#3	20731	
1.0 μ L	7101	22s	70mm	#2	20979	
1.0 μ L	7101	22s	70mm	#3	20733	
2.0 μ L	7002	25	70mm	#2	20751	
2.0 μ L	7002	25	70mm	#3	20732	
2.0 μ L	7102	23	70mm	#2	24592	
2.0 μ L	7102	23	70mm	#3	24593	
5.0 μ L	7105	24	70mm	#2	20980-U	
5.0 μ L	7105	24	70mm	#3	20728	

KHWG (KNURLED HUB WITH GUIDE)

0.5 μ L	7000.5	25	70mm	#3	24596	
1.0 μ L	7001	25s	70mm	#3	20944	
1.0 μ L	7101	22s	70mm	#3	20726	
2.0 μ L	7002	25	70mm	#3	20744	
2.0 μ L	7102	23	70mm	#3	24597	
5.0 μ L	7105	24	70mm	#3	24598	

KHCH (KNURLED HUB WITH CHANEY ADAPTER)

0.5 μ L	7000.5	25	70mm	#3	24594	
1.0 μ L	7001	25s	70mm	#3	20743	
1.0 μ L	7101	22s	70mm	#3	24595	
5.0 μ L	7105	24	70mm	#3	20755	

Repair Kits for 7000 Series

Kit includes needle, plunger wire, ferrule, and instructions.

MODEL	CAT. NO.	PRICE
KH (KNURLED HUB) NEEDLE POINT #2		

7001	26733	
7101	26736	
7002	26739	
7105	26745-U	

KH (KNURLED HUB) NEEDLE POINT #3

7000.5	26729	
7001	26732-U	
7101	26735-U	

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Vials & Syringes

SUPELCO

Syringes

Hamilton On-Column, Special Purpose Syringes and Accessories

On-Column Injection — Removable Needle, Fused Silica (RNFS) Microliter Syringes

Use the 701RNFS syringes with liquid samples. A Teflon plunger tip makes the 1701RNFS syringes gas tight. Syringes come with a replaceable fused silica needle. Capacity 10 μ L, 0.17mm OD, 10cm length, point style #3. Use with 0.20mm ID or larger columns.

DESCRIPTION	CAT. NO.	PRICE
REMOVABLE NEEDLE, FUSED SILICA (RNFS) SYRINGES		
701RNFS	21359	
801RNFS	26717	
1701RNFS	21360-U	
1801RNFS	26720-U	
Teflon ferrule, 0.17mm bore diameter	21362	
Spacer/sleeve for RNFS syringes	21365-U	

On-Column Injection — Fixed Needle Microliter Syringes

The fixed needle design of this Hamilton syringe minimizes dead volume. Stainless steel needle, 12.5cm (for Agilent/HP injectors) or 7.5cm (for Carlo Erba injectors) x 0.24mm OD (32ga.), 90° tip. Use with 0.32mm ID or larger columns.

MODEL	CAPACITY	LENGTH	CAT. NO.	PRICE
FIXED NEEDLE SYRINGE FOR AGILENT/HP INJECTORS				
701SN	10 μ L	12.5cm	21352	
FIXED NEEDLE SYRINGE FOR CARLO ERBA INJECTORS				
701SN	10 μ L	7.5cm	21351	

On-Column Injection — Modified Microliter Syringes

The 7000.5KHOC Hamilton sample-in-needle syringe has a 0.5 μ L sample capacity. Replaceable stainless steel needle/plunger assembly; needle is 10cm x 0.23mm OD. Use with 0.25mm ID or larger columns. This syringe is for liquid samples only.

MODEL	CAPACITY	LENGTH	CAT. NO.	PRICE
SAMPLE-IN-NEEDLE, MODIFIED MICROLITER SYRINGE				
7000.5KHOC	0.5 μ L	10cm	21366	



Hamilton 700 Series Microliter Digital Syringe

The only N.I.S.T. traceable, calibrated syringe device available. Provides constant injection rate. Volume is dispensed within $\pm 0.5\%$ of the syringe volume. Syringe is included.

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
10 μ L	701N	26s	2"	#2	24452	



Constant Rate Syringe

Eliminates injection variability. Spring-driven plunger delivers sample at the same injection rate, regardless of the operator. Micrometer dials the desired volume. Stainless steel plunger and Teflon sealing tip. Repeatable and resettable accuracy $\pm 1\%$.

DESCRIPTION	CAT. NO.	PRICE
Constant Rate Syringe, 2-50 μ L	20713	



Purge and Trap Syringes

This purge and trap version of the SampleLock syringe is designed for analyzing drinking water samples according to US EPA purge and trap concentration techniques (EPA methods 502.1, 502.2, 503.1, 524.1, and 524.2).

DESCRIPTION	TEKMAR EQUIV.	CAT. NO.	PRICE
1005SLPT, 5mL		26294	
1005 TLL, 5mL	14-0069-052	20999	

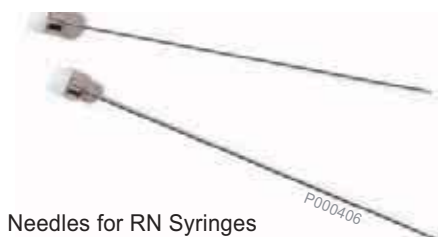
700 Series Microliter Syringes with Electrotaper Needles

These special cemented electrotaper needle syringes are available in the most popular needle gauges, lengths, and point styles of the 700 Series Microliter syringes.

CAPACITY	MODEL	GAUGE	LENGTH	PT.	CAT. NO.	PRICE
10 μ L	701SN	26s	3"	#2	21572	
10 μ L	701SN	26s	4"	#2	21573	
10 μ L	701SN	26s	6"	#2	21574	

Syringes

Needles for Hamilton Syringes



Needles for RN Syringes

CAPACITY	GAUGE	LENGTH	QTY.	CAT. NO.	PRICE
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POINT #1 — CONE TIP

5µL-10µL	26s	1.71"	3	21326	
5µL-10µL	23s	1.71"	3	21327-U	
5µL-10µL	23s-26s	1.71"	3	24582	

POINT #2 — BEVEL TIP

2.5µL-100µL	26s	2"	3	20760-U	
2.5µL-100µL	26	2"	3	20762	
2.5µL-100µL	22s	2"	3	20761	
250µL-10mL	26s	2"	3	23940	
250µL-10mL	26	2"	3	23941	
250µL-10mL	22s	2"	3	20798	
250µL-10mL	22	2"	3	20799	

POINT #3 — BLUNT TIP

2.5µL-100µL	26s	2"	3	20859	
2.5µL-100µL	25s	1.97"	3	58398*	
2.5µL-100µL	22s	2"	3	58649**	
250µL-10mL	26s	2"	3	26708	
250µL-10mL	26	2"	3	26709	
250µL-10mL	25s	1.97"	3	58399*	
250µL-10mL	22s	2"	3	20862	
250µL-10mL	22	2"	3	58650-U**	
250µL-10mL	16▲	2"	3	26710-U	

POINT #5 — CONE TIP, SIDE-PORT HOLE

2.5µL-100µL	26s	2"	3	20878	
2.5µL-100µL	22s	2"	3	20879	
250µL-10mL	26s	2"	3	26711	
250µL-10mL	26	2"	3	26712	
250µL-10mL	22s	2"	3	26713	
250µL-10mL	22	2"	3	20880	

* For Waters.

** For Rheodyne.

▲ Polyetherether ketone (PEEK).

Needles for LT and TLL Syringes

MATERIAL	GAUGE	LENGTH	QTY.	CAT. NO.	PRICE
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POINT #2 — BEVEL TIP

Metal	28	2"	6	20757	
Metal	22	2"	6	21746	
Metal	22s	2"	6	21748-U	
KEL-F	28	2"	6	20756	
KEL-F	22s	2"	6	21749	
KEL-F	22	2"	6	21747	

POINT #3 — BLUNT TIP

Metal	22	2"	6	21741	
KEL-F	22	2"	6	21744*	

POINT #5 — CONE TIP, SIDE PORT

Metal	22	2"	6	20803	
KEL-F	22s	2"	6	21743	
KEL-F	22	2"	6	21742-U	

* For Rheodyne injector (manufacturer equivalent part no. 7215).

DESCRIPTION OF GAUGE SIZES

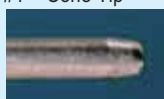
Gauge	OD x ID	Length	Dead Volume
26s	0.019 x 0.005 in.	2"	0.52µL
26	0.018 x 0.010 in.	2"	2.5µL
25s	0.020 x 0.006 in.	1.97"	1.26µL
22s	0.028 x 0.006 in.	2"	0.9µL
22	0.028 x 0.016 in.	2"	6.7µL

SPECIFICATIONS FOR SYRINGE NEEDLES

DESCRIPTION OF POINT STYLES

Point Style #1 – Cone Tip

General Information
Recommended for use with pre-drilled septa. The shape of this needle has been developed for multi-injections on the Agilent/HP 7673A autosampler.



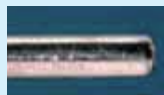
#2 – Bevel Tip

The bevel tip (22° on Hamilton syringes, 20° on SGE syringes) is designed for optimum septum penetration and to prevent septum coring.



#3 – 90° Blunt Tip

The 90° blunt tip has chamfered and polished edges that eliminate damage to the valve's rotor seal and stator face. This style also can be used for pipetting of liquids.



#5 – Cone Tip, Side-Port Hole

Liquid samples can be filled and dispensed through the side hole, and septum damage is minimized by the solid domed tip.



9950106, 107, 109, 108



Needle Cleaning Kit

Formulated specifically for cleaning syringes. This kit includes 70cc bottle (makes 700cc of cleaning solution), ten wires in each of five sizes (0.00350" to 0.01207" OD), and instructions.

DESCRIPTION	CAT. NO.	PRICE
Needle Cleaning Kit	21578	
Replacement Syringe Cleaning Solution	20742	

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Vials & Syringes

SUPELCO

Syringes

Accessories for Hamilton Syringes



Plunger Tips

For field repair of Hamilton Series 1000, 1700, and 1800 syringes. These plungers do not fit Sample Lock syringes.

SYRINGE MODEL	CAT. NO.	PRICE
PLUNGER ASSEMBLIES WITH TIPS		

1001-TLL/TLL w/slot	26160-U
1001 LT-N-LTN-RN	26159
1002 LT-LTN-RN-TLL	26161
1005, all ▲	26162

1010-LT-LTN-RN-TLL	26163
1025-LT-LTN-RN-TLL	26164
1701, all ▲	21343
1702 (C, LT, N, or RN)	26150
1705 (LT, RN, or TLL)	26152-U
1710 (C, LT, N, RN, or TLL)	26154
1725 (LT, N, RN, or TLL)	26156
1750 (LT, LTN, RN, or TLL)	26158-U

1801	27383
1802-N-RN	26151
1805-N-RN	26153
1810-N-RN	26155-U
1825-N-RN	26157

TEFLON PLUNGER TIPS (PACKS OF 5)

1001N, LT, RN	21732
1005N, all ▲	20674
1705N, LT, TLL	20672
1710N, LT, TLL	20673
1750N, LT	21731
1702/1802, all ▲	21335-U
1705/1805 RN	21336
1710/1810 RN	21337
1725/1825 RN/TLL	21338
1750 RN/TLL	21339

▲All = LT, N, TLL, RN.



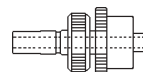
Replacement Barrel Assemblies for 800 Series Syringes

CAPACITY	MODEL	CAT. NO.	PRICE
5µL	85N	20836	
10µL	801N	20837	
10µL	801RN	20838-U	
25µL	802RN	22174	

Luer Fittings for Sample Lock Syringes

DESCRIPTION	CAT. NO.	PRICE
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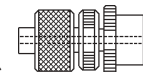
Male Luer/Removable Needle Hub	26292	
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Accepts female Luer

7950469

Male Luer Lock/Removable Needle Hub	26293	
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Accepts female Luer or female Luer lock

7950470



Plunger Guides

DESCRIPTION	CAT. NO.	PRICE
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For 75 and 701 syringes	20765	
For 702, 705, 710, 750, 1702, 1705, 1710, 1725, 1750, and 7000 syringes	26707	

Chaney Adapters

Recommended for sample reproducibility.

DESCRIPTION	CAT. NO.	PRICE
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For 75, 701, and 1701 syringes	26704	
For 702, 705, 710, 750, 1702, 1705, 1710, 1725, 1750, and 7000 syringes with round thumb button	21350-U	



Repeating Dispenser

Accurately divides samples. Discharges $\frac{1}{50}$ of the syringe's capacity at each push of the button. Fits all 10µL-2.5mL Hamilton syringes. Order syringe separately.

DESCRIPTION	CAT. NO.	PRICE
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PB600-1	20943	
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Syringes

SGE Microliter Syringes

Microvolume Syringes

A sample as small as 0.1µL is contained in the needle.

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				PT.	CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	OD					QTY.	CAT. NO.	PRICE
0.5µL	0.5BNR-5	23	50mm	0.63mm		#1	24400		1	24424	
0.5µL	0.5BR-7	23	70mm	0.63mm		#1	24401		1	24425	
0.5µL	0.5BNR-5BV	23	50mm	0.63mm		#2	509140		—	—	—
0.5µL	0.5BNR-OC-5/0.47	26	50mm	0.47mm		#1	509167		1	509175	
0.5µL	0.5BR-OC-7/0.47	26	70mm	0.47mm		#1	509205		1	509213	
1µL	1BR-7	23	70mm	0.63mm		#1	24408		1	24432	
1µL	1BR-5	23	50mm	0.63mm		#1	509221		1	509248	
1µL	1BR-7BV	23	70mm	0.63mm		#2	509256		1	509264	
1µL	1BNR-OC-7/0.47	26	70mm	0.47mm		#1	509272		1	509280	
5µL	5BR-7	23	70mm	0.63mm		#1	24411		1	24435	
5µL	5BR-7BV	23	70mm	0.63mm		#2	509310		—	—	—

Plunger Protection Syringes

NEEDLE SPECIFICATIONS								REPLACEMENT NEEDLES			
CAPACITY	MODEL	GAUGE	LENGTH	OD	PT.	QTY.	CAT. NO.	PRICE	QTY.	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES											
5µL	5F	26	50mm	0.47mm	#2	1	26235-U		—	—	—
10µL	10F	26	50mm	0.47mm	#2	1	21933-U		—	—	—
10µL	10F	26	50mm	0.47mm	#2	6	21934-U		—	—	—
10µL	10F	26	50mm	0.5mm	#2	10	26239		—	—	—
25µL	25F	25	50mm	0.5mm	#2	1	26248		—	—	—
50µL	50F	25	50mm	0.5mm	#2	1	26249-U		—	—	—
100µL	100F	25	50mm	0.5mm	#2	1	26250-U		—	—	—
250µL	250F	25	50mm	0.5mm	#2	1	26251-U		—	—	—
500µL	500F	25	50mm	0.5mm	#2	1	26252		—	—	—
REMOVABLE NEEDLE SYRINGES											
5µL	5R	26	50mm	0.47mm	#2	1	26236		5	24436	
10µL	10R	26	50mm	0.47mm	#2	1	24413		5	24437	
50µL	50R	25	50mm	0.5mm	#2	1	26253-U		5	24447	
100µL	100R	25	50mm	0.5mm	#2	1	24423		5	24447	

Guided Plunger Syringes

CAPACITY	MODEL	GAUGE	NEEDLE SPECIFICATIONS				CAT. NO.	PRICE	REPLACEMENT NEEDLES		
			LENGTH	OD	PT.	QTY.			QTY.	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES											
10µL	10F-GP	26	50mm	0.47mm	#2	1	26240-U	—	—	—	
5µL	5F-GP	26	50mm	0.47mm	#2	1	21521	—	—	—	
REMOVABLE NEEDLE SYRINGES											
5µL	5R-GP	26	50mm	0.47mm	#2	1	24412	5	24436		
10µL	10R-GP	26	50mm	0.47mm	#2	1	24414	5	24437		



Syringes

SGE Gas Tight Syringes

Gas Tight Syringes

Gas Tight syringes are constructed of borosilicate glass, Teflon plunger tips, and KEL-F Luer cones where applicable. An interface between the plunger tip and the barrel enhances the gas sealing properties of the syringe. Plungers are interchangeable and can be autoclaved, but the plunger should be removed.

- Maximum inertness for liquid or gas samples
- Suitable for manual dispenser/diluter applications
- High accuracy of dispensed volume
- Wide variety of terminations

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	POINT	CAT. NO.		QTY.	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES									
10µL	10F-GT	26	50mm	#2	26256	—	—	—	
25µL	25F-GT	25	50mm	#2	26257	—	—	—	
50µL	50F-GT	25	50mm	#2	26258-U	—	—	—	
100µL	100F-GT	25	50mm	#2	26259	—	—	—	
250µL	250F-GT	25	50mm	#2	26260-U	—	—	—	
500µL	500F-GT	25	50mm	#2	26261	—	—	—	
REMOVABLE NEEDLE SYRINGES									
10µL	10R-GT	26	50mm	#2	26237	5	24437	—	
25µL	25R-GT	25	50mm	#2	26262	5	24447	—	
50µL	50R-GT	25	50mm	#2	26263	5	24447	—	
100µL	100R-GT	25	50mm	#2	26264	5	24447	—	
250µL	250R-GT	25	50mm	#2	26265	5	24447	—	
500µL	500R-GT	25	50mm	#2	26266	5	24447	—	
1mL	1MR-GT	23	50mm	#2	509388	—	—	—	
2.5mL	2.5MR-GT	23	50mm	#2	509396	—	—	—	
5mL	5MR-GT	23	50mm	#2	509418	—	—	—	
10mL	10MR-GT	23	50mm	#2	509426	—	—	—	

Gas Tight Syringes, Luer Lock

VOLUME	MODEL	CAT. NO.	PRICE
LUER LOCK SYRINGES (WITHOUT NEEDLE)			
50µL	50F-LL-GT	509450	
100µL	100F-LL-GT	509469	
250µL	250F-LL-GT	509477	
500µL	500F-LL-GT	509485	
1mL	1MF-LL-GT	21964	
2.5mL	2.5MF-LL-GT	509493	
5mL	5MR-LL-GT	21965-U	
10mL	10MR-LL-GT	509507	
25mL	25MDR-LL-GT	509515	
50mL	5MR-LL-GT	21532	
100mL	10MR-LL-GT	21533	

Needles for Luer Lock Syringes

LENGTH	POINT	QTY.	CAT. NO.	PRICE
23 GAUGE				
50mm	#2	5	26270-U	
50mm	#5	2	26271	
70mm	#2	5	26272	
115mm	#2	5	26273-U	
22 GAUGE				
51mm	#3	2	26274	



Syringes

SGE Superflex and Headspace Syringes, SGE Valves

SuperfleX Syringes

Made from elastic alloy plunger that will not bend or kink.

CAPACITY	MODEL	NEEDLE SPECIFICATIONS				CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	OD	POINT			QTY.	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES										
5µL	5FX	26	50mm	0.47mm	#2	23950-U	—	—	—	
10µL	10FX	26	50mm	0.47mm	#2	23944	—	—	—	
10µL	10FX, 6 pk.	26	50mm	0.47mm	#2	23966	—	—	—	
5µL	5FX-5C	26	50mm	0.47mm	#1	26242	—	—	—	
10µL	10FX-5C	26	50mm	0.47mm	#1	26243	—	—	—	
10µL	10FX-5/0.63C, 6 pk.	23	50mm	0.63mm	#1	26247	—	—	—	
REMOVABLE NEEDLE SYRINGES										
5µL	5RX	26	50mm	0.47mm	#2	23953-U	5	24436		
10µL	10RX	26	50mm	0.47mm	#2	23947	5	24437		
10µL	10RX-5/0.63	26	50mm	0.47mm	#1	26245-U	2	26246		



Syringe Valves

DESCRIPTION	SYRINGE CAPACITY	CAT. NO.	PRICE
Valve (no Luer lock)	25µL-2.5mL	509337	—
Valve with Luer lock	25µL-2.5mL	509345	—
Valve with Luer lock	5mL-100mL	509353	—
Valve, push button, LL/LT	any Luer lock	509361	—

Headspace Syringes and Probe

- Fitted with valve and special Luer probe with side hole
- Needle valve in hub allows gas sample to be stored in syringe during transfer to lab
- Recommended for soil headspace extraction
- Probe is removable and replaced with needle during injection in GC

DESCRIPTION	MODEL	CAT. NO.	PRICE
Syringe, 5mL	5MAX-HASV	23984	—
Syringe, 10mL	10MAX-HASV	23986	—
Probe	MAH-P	23985	—

Syringes with Removable Needle Valve

CAPACITY	MODEL	CAT. NO.	PRICE
100µL	100R-V-GT	509531	—
250µL	250R-V-GT	509558	—

Syringes Fitted with Luer Lock Valve (Cat. No. 509353)

CAPACITY	MODEL	CAT. NO.	PRICE
1mL	1MDR-VLL-GT	509590	—
5mL	5MDR-VLLMA-GT	509612	—
10mL	10MDR-VLLMA-GT	509620	—
25mL	25MDR-VLLMA-GT	509639	—
100mL	100MDR-VLLMA-GT	509655	—



Syringes

Valco Syringes

VICI Precision Sampling Syringes



P000433

Series A – Removable Needle This Pressure-Lok syringe allows storage of sample within the syringe. Rotary valve in the needle hub allows for sample pre-pressurization prior to injection.



P000433

Series A-2 – Removable Needle An economically priced general purpose syringe, it is leak-tight to 250psi for both gas and liquids.



P000433

Series C – Removable Needle A heavy duty gas syringe, it features a positive rear plunger stop and a special low-dead volume, removable needle. No sample storage capacity.



P000433

Series D – Removable Needle This standard gas sampling syringe is well-suited for routine laboratory applications. It is leak tight to 250psi and comes with a special low-dead volume, removable needle.



g130435

Magnum Series – Removable Needle This Pressure-Lok series syringe allows sampling and storage of samples up to 500mL. A low-dead volume, removable needle is used, and a rotary valve allows on-site sampling for later analysis. It is ideal for collection, trace analysis and sample concentration of environmental contaminants.

CAPACITY	CAT. NO.	PRICE
SERIES A – REMOVABLE NEEDLE		
0.10mL	22261	
0.25mL	22262	
0.50mL	22263	
1mL	22264	
2mL	22265	
5mL	22266	
10mL	22267	
SERIES A-2 – REMOVABLE NEEDLE		
25µL	22268	
50µL	22269-U	
0.10mL	22270-U	
0.25mL	22271	
0.50mL	22272	
1mL	22273	
2mL	22274	
5mL	22275	
10mL	22276	
SERIES C – REMOVABLE NEEDLE		
0.10mL	22277	
1mL	22280	
2mL	22281	
5mL	22282	
SERIES D – REMOVABLE NEEDLE		
2mL	22295	
MAGNUM SERIES – REMOVABLE NEEDLE		
50mL	21735	
100mL	21736	
500mL	21738	
TEFLON PLUNGER TIPS		

For Series A, A-2, C, and D Pressure-Lok Gas Syringes.*		
500µL, pk. of 2	21950	
1mL, pk. of 2	21951	
2mL, pk. of 2	21952-U	
5mL, pk. of 2	21953-U	

*For 25µL to 250µL syringes, factory repair only.

Replacement Needles

MODEL	POINT STYLE	LENGTH	OD	ID	QTY.	CAT. NO.	PRICE
A	Bevel point, open end	2.25"	0.029"	0.012"	3	20996	
	Side port, taper	2.25"	0.029"	0.012"	3	22288	
A-2, C, D	Bevel point, open end (25-100µL)	2.0"	0.028"	0.005"	3	22298-U	
	Bevel point (100µL-10mL)	2.0"	0.028"	0.012"	3	22299	
	Side port, taper	2.0"	0.028"	0.012"	3	22289	
Magnum	Beveled point, open end	2.0"	0.035"	0.023"	3	21740-U	



E000804

C-120 – Fixed Needle: A general purpose chromatography syringe with a Teflon-tipped plunger. Leak-tight to 250psi.



E000819

C-160 – Fixed Needle: An economically priced general purpose syringe, it is leak-tight to 250psi for both gas and liquids.



P000443

C-160FN, Six-Pack Plus – Fixed Needle: Six syringes with replacement plungers, packaged in protective plastic case.



P000434

CG-130: This model has a reinforced plunger syringe with an internal guide and special plunger that eliminates bending problems.



P000434

D-140 – Removable Needle: A plunger-in-needle design is featured in this GC sample injection syringe. A positive rear stop prevents plunger bending. It fills by retracting the plunger, and features easy maintenance and replaceable parts.

Replacement Needles for CG-130 Syringes

DESCRIPTION	CAT. NO.	PRICE
0.019" x 0.005" x 2.25" bevel point, pk. of 3	20949	

CAPACITY	CAT. NO.	PRICE
C-120 — FIXED NEEDLE		
5µL	20960-U	
10µL	20961	
25µL	20962	
100µL	20964	
C-160 — FIXED NEEDLE		
10µL	20950-U	
25µL	20951-U	
50µL	20952-U	
100µL	20953	
C-160FN, SIX-PACK PLUS – FIXED NEEDLE		
10µL	22213	
CG-130		
Fixed Needle		
5µL	20954	
10µL	20955-U	
Removable Needle		
5µL	20956-U	
10µL	20957-U	
D-140 – REMOVABLE NEEDLE		
2µL	20985	



P000444

Syringes

HPLC Syringes

Glenco Valve Flushing Syringes

Allows you to flush away the last traces of old sample. Use with VISF-1 Valco valve. Capacity of syringe is 1mL.

DESCRIPTION	QTY.	CAT. NO.	PRICE
For Valco VISF-1 injection valve	1	23009	
Replacement needles	2	23013	
Replacement screw hub nut	6	23014	



Hamilton Valve Flushing Syringes

DESCRIPTION	CAT. NO.	PRICE
VALVE FLUSHING SYRINGE, 1mL CAPACITY		
For Rheodyne/SSI/Valco (VISF-2) injection valves	58643	
Replacement Needles, pk. of 3	58650-U	
1010W SYRINGE, 10mL CAPACITY		
For Waters 6000 & 6000A solvent delivery systems	21566	
Tubing Assembly for 1010 Syringe	57687	



SGE Microvolume Syringes for HPLC Valves

CAPACITY	MODEL	GAUGE	LENGTH	OD	PT.	CAT. NO.	PRICE	QTY.	CAT. NO.	PRICE
FIXED NEEDLE SYRINGES FOR RHEODYNE AND VALCO VALVES										
5µL	5F-LC	22	2"	0.028"	#3	509779		—	—	—
10µL	10F-LC	22	2"	0.028"	#3	509787		—	—	—
25µL	25F-LC	22	2"	0.028"	#3	509795		—	—	—
100µL	100F-LC	22	2"	0.028"	#3	509817		—	—	—
250µL	250F-LC	22	2"	0.028"	#3	509825		—	—	—
500µL	500F-LC	22	2"	0.028"	#3	509833		—	—	—
REMOVABLE NEEDLE SYRINGES FOR RHEODYNE AND VALCO VALVES										
5µL	5R-LC	22	2"	0.028"	#3	509841		5	23975	
10µL	10R-LC	22	2"	0.028"	#3	509868		5	24438-U	
25µL	25R-GT-LC	22	2"	0.028"	#3	509876		5	509949	
50µL	50R-GT-LC	22	2"	0.028"	#3	509884		5	509949	
100µL	100R-GT-LC	22	2"	0.028"	#3	509892		5	509949	
250µL	250R-GT-LT	22	2"	0.028"	#3	509906		5	509949	
500µL	500R-GT-LC	22	2"	0.028"	#3	509914		5	509949	
1mL	1MDR-LC-GT	22	2"	0.028"	#3	509922		5	509957	
2.5mL	2.5MDR-LC-GT	22	2"	0.028"	#3	509930		5	509957	
SUPERFLEX HPLC SYRINGES FOR RHEODYNE AND VALCO VALVES										
5µL	5FX-LC	22	2"	0.028"	#3	23952		—	—	—
10µL	10FX-LC	22	2"	0.028"	#3	23946		—	—	—
SUPERFLEX HPLC SYRINGES FOR WATERS VALVES										
10µL	10RX-LC	25	2"	0.5"	#3	23948		5	24438-U	

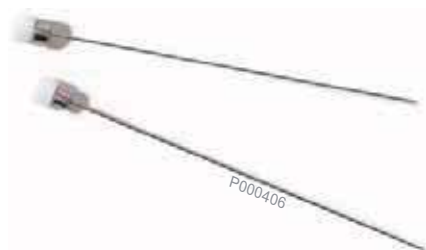
Syringes HPLC Syringes

417



Hamilton HPLC Syringes

CAPACITY	MODEL	NEEDLE SPECIFICATIONS			CAT. NO.	PRICE	REPLACEMENT NEEDLES		
		GAUGE	LENGTH	POINT			QTY.	CAT. NO.	PRICE
700 SERIES SYRINGES – FOR RHEODYNE, VALCO VISF-2, ALTEX AND SSI INJECTION VALVES									
10µL	701SNR	22s	2"	#3	58380-U	—	—	—	
25µL	702SNR	22s	2"	#3	58381	—	—	—	
50µL	705SNR	22s	2"	#3	58382	—	—	—	
100µL	710SNR	22s	2"	#3	58383	—	—	—	
250µL	725SNR	22	2"	#3	58384	—	—	—	
500µL	750SNR	22	2"	#3	26222-U	—	—	—	
800 SERIES LC SYRINGES – FOR WATERS U6K LOOP INJECTOR									
10µL	801RNW	25s	5cm	#3	58390-U	1	58398		
25µL	802RNW	25s	5cm	#3	58391	1	58398		
50µL	805RNW	25s	5cm	#3	58392	1	58398		
100µL	810RNW	25s	5cm	#3	58393	1	58398		
250µL	825RNW	25s	5cm	#3	58394	1	58399		
1700 SERIES GASTIGHT SYRINGES – FOR RHEODYNE, VALCO VISF-2, ALTEX AND SSI INJECTION VALVES									
10µL	1701RNR	22s	2"	#3	20885	3	58649		
25µL	1702RNR	22s	2"	#3	20886	3	58649		
50µL	1705RNR	22s	2"	#3	20887	3	58649		
100µL	1710RNR	22s	2"	#3	20888	3	58649		
250µL	1725RNR	22	2"	#3	20889	3	58650-U		
500µL	1750RNR	22	2"	#3	20890-U	3	58650-U		



Needles for RN Syringes

CAPACITY	GAUGE	LENGTH	QTY.	CAT. NO.	PRICE
POINT #3 — BLUNT TIP					
2.5µL-100µL	26s	2"	3	20859	—
2.5µL-100µL	25s	1.97"	3	58398*	—
2.5µL-100µL	22s	2"	3	58649**	—
250µL-10mL	26s	2"	3	26708	—
250µL-10mL	26	2"	3	26709	—
250µL-10mL	25s	1.97"	3	58399*	—
250µL-10mL	22s	2"	3	20862	—
250µL-10mL	22	2"	3	58650-U**	—
250µL-10mL	16 PEEK	2"	3	26710-U	—

* For Waters.

** For Rheodyne.

▲ Polyetherether ketone.

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Vials & Syringes

SUPELCO

Syringes

Syringes Accessories



20940
P000432

Miniature Two-Way Inlet Valve
Meets requirements for US EPA Method 602 for purgeable aromatic compounds

This miniature two-way valve is durable, dependable, and easy to use. The inert plastic components (CTFE body and female Luer connectors, PTFE core) will not interact with ultrapure or corrosive fluids. Its small size (2³/₁₆" x 33mm) and weight (1 oz. / 28g) make it unobtrusive. A 0.059" internal passage minimizes sample hold-up.

When used with a Hamilton Teflon Luer Lock (TLL) syringe, the valve is particularly useful for transporting gaseous or liquid samples (e.g., environmental analyses of air or water). Use the valve with the Hamilton fittings included, or with any standard 1/4" x 28 threaded fittings (e.g. Cheminert fittings) in flexible tubing systems.

Aluminum housing, stainless steel driver stem, operating range from 10°C to 100°C at pressures to 100psi (7kg/cm²)

DESCRIPTION	CAT. NO.	PRICE
Miniature Two-Way Inlet Valve With male and female connectors	20940	
Sample Valve for Tekmar concentrators, 14-0036-050*	20971	
Male Luer Connector, 14-0122-016*	20941	
Female Luer Connector, 14-0216-016*	20942-U	

¹ Order Luer connector separately.

* Tekmar equivalent.



20971
E000805



20926

Teflon Body Two-Way Valve

This miniature, two-way valve from Hamilton provides flexibility, inertness, and small size for collecting gas samples and transporting or storing them in the original sampling syringe.

Fluid path is made entirely of Teflon to ensure inertness. Can be autoclaved for applications requiring sterility. 100psig maximum pressure. Fits Hamilton Teflon Luer lock (TLL) and other Luer lock syringes.

DESCRIPTION	CAT. NO.	PRICE
Teflon Body Two-Way Valve	20926	



22285
P000432

Push Button Valve

A convenient add-on Mininert valve gives your syringe sample storing capability. It features push-button operation and an all-Teflon body with a stainless steel miniature valve stem.

DESCRIPTION	CAT. NO.	PRICE
For TLL syringes (Hamilton and SGE)	22285	
For Series C and D Pressure-Lok syringes (Valco)	22284	

Syringes

Syringe Accessories



Syringe Cleaner

Helps rid your chromatogram of ghosts

Cleans Hamilton syringes and other syringes with needles up to 18 gauge (0.049" OD). Just connect the unit to your water aspirator or other vacuum source, insert the needle through the septum and, in 10-30 seconds, you're ready for a new sample. A combination of heat (250°C) and vacuum vaporizes and removes contaminating volatiles in a single operation.

No liquids are required with Hamilton Series 7000 syringes. For Series 700 and other conventional syringes, use a rheostat to lower the temperature (to 50°C or below) and maintain a flow of solvent through the barrel and needle. Instructions are included.

DESCRIPTION	CAT. NO.	PRICE
Hamilton Syringe Cleaner, 120V	20770-U	
Replacement Septa, 5mm, pk. of 100	20712	



Needle Cleaning Kit

Formulated specifically for cleaning syringes. Kit includes 70cc bottle (makes 700cc of cleaning solution), ten wires in each of five sizes (0.00350" to 0.01207" OD), and instructions.

DESCRIPTION	CAT. NO.	PRICE
Needle Cleaning Kit	21578	
Replacement Syringe Cleaning Solution	20742	

Proper Syringe Care Ensures Consistent Injections and Long Syringe Life

Syringes are precision instruments. The care you take in using, handling, and storing them are keys to consistent injections, quality chromatograms, and long syringe life.

- Generally, for consistently accurate injections, the sample size should not be less than 10% or more than 80% of the syringe's capacity.
- Temperatures above 50°C can damage most fixed-needle syringes, due to expansion of the metallic needle.
- Routinely inspect your syringe for damage. Look for hairline cracks, and discard any syringe with a potentially unsafe barrel. The needle tip must be free of barbs. Barbs will tear the septum, creating particles that can clog the needle and deposit in your chromatographic system.
- Never store a syringe without cleaning it. Use caution when cleaning syringes containing epoxy glue or Teflon materials.
 - Epoxy glue is not completely resistive to every solvent. A solvent such as methanol, methylene chloride, acetonitrile, acetone, or butyl amine (and others) can result in a contaminated plunger, adherence of the plunger into the barrel, a loose needle, or a clogged needle.
- If your syringe contains a Teflon tip, be sure to replace the plunger and tip assembly immediately if metal is exposed. The plunger scrapes the glass of the syringe barrel, producing glass fragments that cut grooves in the Teflon tip. These grooves allow to leak past the tip. Caustic samples or cleaning solutions that seep under the Teflon tip destroy the sharp Teflon tip that holds the on the plunger. The tip, when loosened, could slip off during sample aspiration.