

# HPLC Accessories





## HPLC Accessories

Instrument Replacement Parts .....	342-347
Filters, Mobile Phase Accessories .....	348-353
Fittings, Connectors, Tools, Tubing .....	354-358
Flow Splitters, Static Mixers, Backpressure Regulators, Pulse Dampers .....	359-360
Column Hardware .....	361
Column Pack in a Box Kit .....	362
Organizers .....	362
Tech Tips: Pressure Conversion; Solvent Miscibility ...	363
HPLC Syringes .....	293-297
HPLC Column Test Mixes .....	516-517
Reference Books .....	www.restek.com

**HPLC Columns .....**298-339

**HPLC Applications .....**518-559

## Restek Replacement Parts for Agilent HPLC Systems



Piston Seals



Outlet Ball Valve



Needle Seat Assembly



Lamp, VWD G1314A

new!

new!

Description	Model #	Similar to Agilent part #	qty.	cat.#
Preventive Maintenance Kit (Includes: rotor seal, needle seat, needle assembly, seat cap)	1050	01078-68721	kit	25259
Autosampler Preventive Maintenance Kit (Includes: rotor seal, needle assembly, needle seat)	1100	G1313-68709	kit	25271
Pump Maintenance Kit (Includes: PTFE frit, outlet cap, active inlet cartridge, gold disk seal, 2 piston seals, glass solvent filter)	1050, 1100	G1311-68710	kit	25270
Outlet Ball Valve, Binary Pump	1100, 1200	G1312-60012	ea.	25267
Outlet Ball Valve	1050, 1100, 1200	G1311-60012	ea.	25276
Sieves for Outlet Valve	1050, 1100, 1200	5063-6505	10-pk.	25266
Check Valve Cartridge Assembly	1090	79835-67101	ea.	25344
Piston Seals, Teflon® w/Graphite	1050, 1100, 1200	5063-6589	2-pk.	22482
Piston Seals, Teflon® w/Graphite	1050, 1100, 1200	5063-6589	10-pk.	22483
Piston Seals (Black)	1090	5062-2494	4-pk.	25347
Seal Wash Kit, Binary Pump (4 seals, 4 gaskets)	1100	—	kit	25268
Seal Wash Kit (2 seals, 2 gaskets)	1050, 1100	—	kit	25269
Wash Seal	1050, 1100, 1200	0905-1175	ea.	25277
Sapphire Piston	1050, 1100, 1200	5063-6586	ea.	25273
Sapphire Piston	1090	6980-0672	ea.	25345
Needle Seat	1050	79846-67101	ea.	25258
Needle Seat	1090	79846-67101	ea.	25348
Needle Seat Assembly	1100	G1313-87101	ea.	25265
Needle Assembly	1100	G1313-87201	ea.	25278
Rotor Seal (not for use with 7125 injection valve)	1050	0101-0626	ea.	25272
Rotor Seal	1100	0100-1853	ea.	25275
Rotor Seal (Rheodyne®-style)	1090	0101-0623	ea.	25349
Frits, PTFE	1050, 1100, 1200	01018-22707	5-pk.	25466
Seal, Gold Disk (outlet)	1050, 1100, 1200	5001-3707	ea.	25467
Outlet Cap	1050, 1100	5062-2485	4-pk.	25139
Outlet Cap & Gold Seal Assembly	1050, 1100	—	2-pk.	25140
Connecting Tube	1050, 1100	G1311-67304	ea.	25058
Bottle Head Assembly	—	G1311-60003	ea.	25059
Detector Lamp, 1090 DA, 1050 VW/DA/MWD	1090, 1050	79883-60002	ea.	25260
Lamp, DAD G1315A, G1365A	1100, 1200	2140-0590	ea.	25261
Lamp, VWD G1314A	1100, 1200	G1314-60100	ea.	25262
8453 Deuterium Lamp	—	2140-0605	ea.	25263
G1321 Fluorescence Detector Flash Lamp	—	2140-0600	ea.	25264
Lamp, DAD Long Life Deuterium (2000 hours)	1100	5181-1530	ea.	25399
Helium Tubing, 5m, PTFE, 0.057" ID	1050, 1100	5062-2461	ea.	24990
Injector Lubricant, PTFE, 10g	1050, 1100	79841-65501	ea.	26520

## Capillary Stainless Steel Tubing Assemblies for Agilent HPLC Systems



Capillary SS Tubing with fittings



Mixing Capillary Assembly

Description	Model #	Similar to Agilent part #	qty.	cat.#
Capillary SS Tubing, 130mm x 0.17mm ID, with fittings	1090	01090-87305	ea.	26525
Capillary SS Tubing, 800mm x 0.17mm ID, with fittings	1050	01078-87305	ea.	26526
Capillary SS Tubing, 180mm x 0.17mm ID, with fittings	1100	G1313-87305	ea.	26527
Capillary SS Tubing, 700mm x 0.25mm ID, with fittings	1050	01018-67305	ea.	26528
Capillary SS Tubing, 700mm x 0.25mm ID, with fittings	1050	01078-87306	ea.	26529
Seat Capillary, SS Tubing, 0.17mm ID	1050	01078-87303	ea.	26530
Capillary SS Tubing, 105mm x 0.17mm ID	—	5021-1816	ea.	26531
Mixing Capillary Assembly	1100	G1312-67302	ea.	26532
Capillary SS Tubing, Valve to Metering Head	1100	G1313-87301	ea.	26533
Capillary SS Tubing, 150mm x 0.17mm ID	—	5021-1817	ea.	26534
Capillary SS Tubing, 280mm x 0.17mm ID	—	5021-1818	ea.	26535
Capillary SS Tubing, 400mm x 0.17mm ID	—	5021-1819	ea.	26536
1/16" SS Fitting, Front and Back Ferrules	—	5062-2418	10-pk.	26537

### Outlet Cap and Gold Seal Assembly Tool for Agilent 1050 & 1100 HPLC Systems

Easily install the gold seal into the outlet cap.



- Put Outlet Cap on male part of Assembly Tool.
- Push the Assembly Tool together.
- Hold onto Outlet Cap and pull Assembly Tool apart.
- Put Gold Seal over pin on male part of Assembly Tool.
- Push the Assembly Tool together and press the Gold Seal in the Outlet Cap.
- Pull the Assembly Tool apart and remove assembled Outlet Cap and Gold Seal.



Outlet Cap & Gold Seal Assembly

**Description**

Description	qty.	cat.#
Outlet Cap and Gold Seal Assembly Tool for Agilent 1050 & 1100 HPLC Systems	ea.	24989
Seal, Gold Disk (outlet)	ea.	25467
Outlet Cap	4-pk.	25139
Outlet Cap & Gold Seal Assembly	2-pk.	25140

### Restek Replacement Parts for Beckman HPLC Systems

Description	Model #	Similar to Beckman part #	qty.	cat.#
Inlet Check Valve Assembly	110A&B, 112, 114M, 116, 118, 125, 126, 127, 128 Pumps	240720	ea.	25439
Outlet Check Valve Assembly	110A&B, 112, 114M, 116, 118, 125, 126, 127, 128 Pumps	240721	ea.	25440
Inlet Check Valve Cartridge for Check Valve Assembly	110A&B, 112, 114M, 116, 118, 125, 126, 127, 128 Pumps	240620	ea.	25441
Outlet Check Valve Cartridge for Check Valve Assembly	110A&B, 112, 114M, 116, 118, 125, 126, 127, 128 Pumps	240621	ea.	25442
Guide Sleeve for Graphite Plunger Guide	110 Series Pumps	243713	ea.	25444
Outlet Check Filter Frit Assembly	110 Series Pumps	240619	ea.	25445
Piston Guide Assembly	110 Series and 112 Pumps	243045	ea.	25446
Plunger	110 Series and 112 Pumps	243053	ea.	25447
Plunger Seal	110 Series Pumps	887138	ea.	25448
Plunger Seal	112 Pumps	236797	ea.	25449
Sapphire Plunger	114M, 116, 118, 125, 126, 127, 128 Pumps	240714	ea.	25450
Plunger Seal	114M, 116, 118, 126, 127, 128 Pumps	241037	ea.	25451
Pump Seal, Gold*	114, 116, 125, 126, 127, 128 Pumps	241037	ea.	25452
Plunger Wash Seal	125, 126, 127, 128 Pumps	728772	ea.	25453
Deuterium Lamp	DU60, 62, 64, 65	596791	ea.	25454

\*Ultra-high molecular weight polyethylene (UHMWPE).



Outlet Check Valve Assembly



Sapphire Plunger

### Restek Replacement Parts for Hitachi HPLC Systems

Description	Model #	Similar to Hitachi part #	qty.	cat.#
SS Check Valve Cartridges (1/16" Ruby Ball)	655/6000/6200	AN0-085	2-pk.	25455
Inlet Check Valve Assembly	655/6000/6200	AN0-0833	ea.	25456
Outlet Check Valve Assembly	655/6000/6200	AN0-0834	ea.	25457
Plunger Assembly	655, 6000, 6200, 7100	810-1033	ea.	25458
Plunger Seal	L655A, 6000, 6200, 7100	655-1080	ea.	25459
Plunger Seal, Gold	655, 6000, 6200, 7100	655-1080	ea.	25460
Inlet Check Valve Assembly	L-7100	AN0-0836	ea.	25461
Outlet Check Valve Assembly	L-7100	AN0-0837	ea.	25462
Rotor Assembly for Dilutor Valve	AS-7200 Autosampler	810-3085	ea.	25463
Rotor Seal Kit	AS-7200, AS-7250 Injection Valve	AN0-0818	ea.	25464
Deuterium Lamp, Prealigned	L4000, L4200, L4250, L7400	885-3570	ea.	25465



## Restek Replacement Parts for PerkinElmer HPLC Systems



Description	Model #	Similar to PerkinElmer part #	qty.	cat.#
Inlet Check Valve	PE 200, 4, 250, 400, 410, 620	2540177	ea.	25438
Outlet Check Valve	PE 200, 4, 250, 400, 410, 620	2540197	ea.	25437
High Pressure Seal Kit	PE Series 200 Pumps--1, 2, 3, 3B, 4, 10, 250, 400, 410, 620, Int. 4000 Pump	2540275	ea.	25433
Standard High Pressure Seal	PE Series 200 Pumps--1, 2, 3, 3B, 4, 10, 250, 400, 410, 620, Int. 4000 Pump	9907324	ea.	25434
Low Pressure Seal	PE Series 200 Pumps	9907339	ea.	25435
Needle	PE Series 200 Pumps	N2930023	ea.	25432
Deuterium Lamp	PE Lambda--2, 5, 7, 8, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 40, 800, 900	B0160917	ea.	25436
Deuterium Lamp	PE 200/785A	N2920149	ea.	25431

## Restek Replacement Parts for Shimadzu HPLC Systems



Inlet Check Valve  
(cat.#26521)

Description	Model #	Similar to Shimadzu part #	qty.	cat.#
Inlet Check Valve	LC-6A, LC-10AS	228-12353-91	ea.	25287
Inlet Check Valve	LC-600, LC-9A, LC-10AD	228-18522-91	ea.	25295
Inlet Check Valve	LC-10ADvp	228-39093-92	ea.	24984
Inlet Check Valve	LC-10AT, LC-10ATvp	228-32166-91	ea.	26521
Outlet Check Valve	LC-6A, LC-10AS	228-09054-93	ea.	25288
Outlet Check Valve Rebuild Kit	LC-6A, LC-10AS	228-11200-91	2-pk.	25289
Outlet Check Valve	LC-600, LC-9A, LC-10AD, LC-10AT	228-18522-92	ea.	25282
Outlet Check Valve	LC-10ADvp, LC-10ATvp	228-34976-91	ea.	24983
Plunger Seal	LC-6A	228-11999-00	ea.	25285
Plunger Seal, Polyethylene	LC-10AS, LC-10AT, LC-10ATvp	228-21975-00	ea.	25290
Plunger Seal	LC-600, LC-9A, LC-10AD	228-18745-00	ea.	25293
Plunger Seal	LC-10ADvp, LC 20AD	228-35146-00	ea.	24980
Plunger Seal, Gold	LC-10ADvp	228-32628-00	ea.	24981
Plunger Seal	SIL-10ADvp, LC-10ATvp	228-35145-00	ea.	24985
Plunger Rinse Seal	LC-10AS	228-28499-00	ea.	25292
Sapphire Plunger	LC-6A	228-12904-93	ea.	25286
Sapphire Plunger	LC-10AS	228-17019-93	ea.	25291
Sapphire Plunger	LC-600, LC-9A, LC-10AD	228-18523-91	ea.	25294
Needle Seal	SIL-10A, 10XL, 10ADvp	228-33355-04	ea.	25468
Rotor Seal	SIL-10ADvp	228-21217-97	ea.	24986
Rotor Seal Assembly	SIL-10A, 10AXL	228-21217-91	ea.	25469
Stator Assembly	SIL-10A, 10AXL	228-21220-91	ea.	25470
Syringe, 500 $\mu$ L	SIL-10A, 10AXL	228-25237-04	ea.	25471
Plunger Assembly, Ceramic	LC-10ADvp	228-35601-91	ea.	25472
Plunger Assembly, Ceramic	LC-10ATvp	228-35009-92	ea.	25473
Plunger Assembly, Sapphire	LC-10ADvp	228-35601-92	ea.	24982
Deuterium Lamp	SPD-6A	062-65056-02	ea.	25283
Deuterium Lamp	SPD-10A, 10AV, M20A	228-34016-02	ea.	25284



**Paula Zuchowski**  
Customer Service  
Representative  
*5+ years of service!*

## Restek Replacement Parts for Thermo Separation HPLC Systems

Description	Model #	Similar to SP/TSP part #	qty.	cat.#
Inlet Check Valve Assembly	SP8800 & P-Series Pumps	A3495-010	ea.	25474
Outlet Check Valve Assembly	SP8800 Series Pumps	A3490-010	ea.	25475
Piston	SP8800 & P-Series Pumps	A3102-010	ea.	25476
Back-up Seal	SP8800 & P-Series Pumps	A2963-010	ea.	25477
Plunger Seal, Gold Superseal	SP8800 & P-Series Pumps	A2962-010	ea.	25478
Check Valve and Transducer Assembly	P-Series Pumps	A3990-010	ea.	25479
Kel-F® Washer	P-Series Pumps	A2973-010	ea.	25480
Rotor Seal Assembly, Rheodyne® 7010	TSP AS100, 300, 1000, 3000, 3500, 8875, and 8880 Autosamplers	7010-039	ea.	25481
Syringe Assembly, 250µL	TSP AS100, 300, 1000, 3000, 3500, 8875, and 8880 Autosamplers	A3588-020	ea.	25482
Syringe, 500µL	8800 Series	3301-0100	ea.	25483
Lamp, UV	Linear UV-200, 203, 204, 205, 206, and UV 100, 150, 1000, and 2000 Detectors	9551-0023	ea.	25484

Description	Model #	Similar to TSP part #	qty.	cat.#
Check Valve Cartridge	LDC Constametric Pumps	900946	ea.	25485
Sapphire Plunger	LDC Constametric Pumps	801306	ea.	25486
Plunger Seal Kit, Gold	LDC Constametric Pumps	31-36-00754	ea.	25487
Plunger Seal, Black	LDC Constametric Pumps	206129001	ea.	25488
Plunger Seal, Gold	LDC Constametric Pumps	206156001	ea.	25489
Lamp, Deuterium	LDC SM-I, II, III, 3000, 3100, 3100X, and 4000 Detectors	108035	ea.	25490
Lamp, Deuterium Pre-aligned	LDC 3200 and 4100 Detectors	900918001	ea.	25491



Piston



Syringe Assembly, 250µL



Lamp, UV



Inlet Check Valve Assembly

## Restek Rheodyne® Style Replacement Parts for Waters HPLC Systems

Description	Similar to Rheodyne® part #	qty.	cat.#
7010 Vespel® Rotor Seal	7010-039	ea.	25279
7125 Vespel® Rotor Seal	7125-047	ea.	25280
Isolation Seal, 7010	7010-015	ea.	25281

For easy access to Rheodyne® fittings, use a ValvTool Wrench—see page 357.



7125 Vespel® Rotor Seal (both sides shown)

## Restek Replacement Parts for Waters Detectors

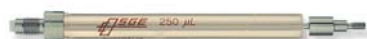
Description	Model #	Similar to Waters part #	qty.	cat.#
Window Gasket	484, 486, 490	80335	ea.	25423
Lamp Side Gasket	484, 486, 490	80336	ea.	25424
Quartz Lens	486	80687	ea.	25427
Xenon Lamp (w/o holder or mirror)	470	—	ea.	25404
Xenon Lamp	474	—	ea.	25405
Deuterium Lamp (UV/Vis)	480, 481	99499	ea.	25403
Deuterium Lamp (UV/Vis)	484	80357	ea.	25406
Deuterium Lamp (UV/Vis)	486	80678	ea.	25407
Deuterium Lamp	996, 2996	WAT052586	ea.	25408
Deuterium Lamp	2487	WAS081142	ea.	25409
Deuterium Lamp, long life (2000 hours)*	486	80678	ea.	25410

\*Standard lamps have nominal 1000-hour life.



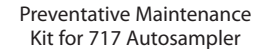


also **available**

HPLC autosampler syringes. See [pages 296-297](#).



## Restek Replacement Parts for Waters HPLC Systems

Description	Model #	Similar to Waters part #	qty.	cat.#
 <p>Preventative Maintenance Kit Includes: sparge diffuser, filter insert, compression screws, SS ferrule, battery for 2690/717, 250µL WISP™ syringe, seal wash plunger seal kits (2), wash tube seal kits (4), 2690 seal pack rebuild kit (steel bodies not included), 2690 head plunger seal kits (2), solvent reservoir 20µm filters (4), Alliance® check valve cartridges (2), Alliance® plunger assemblies (2), 2690 face seals (4)</p>	Alliance® 2690, 2695	WAT270944	kit	25143
	600 Pump	WAT052675	kit	25144
 <p>Preventative Maintenance Kit Includes: PerformancePLUS™ cartridges (2), sparge diffusers (4), Super Seals™ (2), solvent reservoir 20µm filters (2), sapphire plungers (2), reference valve rebuild kit, inlet manifold kit</p>	717 Autosampler	WAT052669	kit	25145
	616 Pump	WAT052672	kit	25146
 <p>Preventative Maintenance Kit Includes: 616/326/625 plunger assemblies (2), pump seal kit, sparge diffusers (4), solvent reservoir 20µm filters (4), 616 cartridge assemblies (4)</p>	515 Pump	WAT052587	kit	26519
	Inlet Check Valve Assembly	M6KA, 501, 510, 515, 590, 600E	33679, 25214	ea.
Inlet Check Valve Housing	M6KA, 501, 510, 515, 590, 600E	25203	ea.	25361
Inlet Check Valve Rebuild Kit	M6KA, 501, 510, 515, 590, 600E	60495	2-pk.	25362
Outlet Check Valve Assembly (Actuator Style)	M6KA, 501, 510, 515, 590, 600E	25030	ea.	25363
Outlet Check Valve Housing (Actuator Style)	M6KA, 501, 510, 515, 590, 600E	25212	ea.	25364
Outlet Check Valve Rebuild Kit (Actuator Style)	M6KA, 501, 510, 515, 590, 600E	26016	2-pk.	25365
Outlet Check Valve Assembly (Ball & Seat Style)	M6KA, 501, 510, 515, 590, 600E	25216	ea.	25366
Outlet Check Valve Housing (Ball & Seat Style)	M6KA, 501, 510, 515, 590, 600E	25207	ea.	25367
Outlet Check Valve Rebuild Kit (Ball & Seat Style)	M6KA, 501, 510, 515, 590, 600E	26014	2-pk.	25368
Inlet Check Valve Assembly, 225µL (Extended Flow)	M6KA, 501, 510, 515, 590, 600E	60307	ea.	25369
PerformancePLUS™ Check Valve Cartridge	M6KA, 501, 510, 515, 590, 600E	700000254	2-pk.	25370
Check Valve Rebuild Kit (Extended Flow)	M6KA, 501, 510, 515, 590, 600E	88223	2-pk.	25371
PerformancePLUS™ Check Valve Housing	M6KA, 501, 510, 515, 590, 600E	—	ea.	25372
Check Valve Cartridges	Alliance®	WAT270941	2-pk.	25373
Super Seal™ for Analytical Heads	M6KA, 501, 510, 515, 590, 600E	22946, 22934	ea.	25374
Plunger Seal, Gold for Analytical Heads*	M6KA, 501, 510, 515, 590, 600E	22934	ea.	25375
Plunger Seal, Black for graphite-filled Teflon®	M6KA, 501, 510, 515, 590, 600E	26613	ea.	25378
Plunger Seal, Black for EF Heads	510, 590, 600E	26644	ea.	25379
Plunger Seal, Gold for EF Heads	510, 590, 600E	26644	ea.	25380
Seal Wash Plunger Seal	Alliance®	WAT271018	2-pk.	25386
Head Plunger Seal Kit	Alliance®	WAT270938	2-pk.	25387
Head Plunger Seal Kit (Black)	Alliance®	WAT271066	2-pk.	25388
Insert Seal Parts Kit	M6KA, 501, 510, 515, 590, 600E	60012	kit	25389
Sapphire Plunger	M6KA, 510, 590, 600	25656	ea.	25381
Sapphire Plunger (Extended Flow)	510, 590, 600E	60304	ea.	25382
Sapphire Plunger	M45, M501	26524	ea.	25383
Sapphire Plunger Assembly Kit	M515	WAS207069	ea.	25384
Sapphire Plunger	616, 625, 626	31788	ea.	25420
Sapphire Plunger	Alliance®	WAT270959	ea.	25385
Pressure Transducer	M6KA, M45, 501, 510, 590, 600E	WAT060329	ea.	25391
Draw-Off Tube Assembly	510, 515, 600, 610	25470	ea.	25392
Inlet Manifold Kit	M45, 501, 510, 590, 600E	60448	kit	25412
Ferrule, Stainless Steel	515	22330	ea.	25417
Wash Face Seal	Alliance® 2690	WAT271017	ea.	25428
Wash Tube Seal Kit	Alliance® 2690	WAT270940	4-pk.	25429
Rebuild Kit, Reference Valve	600 Pump	25746	ea.	25492
Compression Screws, Stainless Steel	Alliance® 2690	—	2-pk.	25493
Battery	Alliance® 2690, 717, 486, 484	—	ea.	25494
Seal Pack Rebuild Kit, without Seal Wash Tube Assembly	Alliance® 2690	WAT271019	ea.	25495
717 Seal Pack (Rebuilt) with Needle	717 Autosampler	4559	ea.	25496
Seal Kit, Pump	616 Pump, 626, 625	31790	ea.	25497
Cartridge Assembly, Stainless Steel	616 Pump	24960	ea.	25498

\*Ultra-high molecular weight polyethylene (UHMWPE).



Preventative Maintenance Kit for 717 Autosampler

new!



Inlet Check Valve Assembly



717 Seal Pack (Rebuilt) with Needle

### ASI Piston Seals for Agilent HPLC Systems

Over time the piston seal in every HPLC system becomes worn and must be replaced. Our piston seals are constructed of Teflon® material with an additive that reduces their tendency to “cold flow” and improves their wear characteristics. Teflon® seals are more resistant to any HPLC solvent than UHMWPE seals, but they are less wear resistant and rugged. For Agilent 1050 and 1100 HPLC systems.

Description	qty.	cat.#
ASI Piston Seal	ea.	25175
ASI Piston Seal	10-pk.	25176



### ASI Check Valves

ASI subjects each valve to a rigorous series of tests, including self-priming capability, which means you typically won't need a syringe or draw-off valves to prime your pump. A high-pressure test ensures that the valve will not leak, even at pressures up to 12,000psi (82,737kPa). A low-pressure test verifies that the valve closes properly, even without a high backpressure force. The cartridge design allows easy, convenient replacement of worn or damaged valves.

#### ASI Check Valves for Agilent 1050 & 1100

Description	Material	qty.	cat.#
Outlet Check Valve (cartridge and housing)	Sapphire & Ruby Ball & Seat	ea.	25170
Outlet Check Valve (cartridge and housing)	Ceramic Ball & Seat	ea.	25173
Outlet Cartridges	Sapphire & Ruby Ball & Seat	ea.	25171
Outlet Cartridges	Ceramic Ball & Seat	ea.	25174
Outlet Housing	—	ea.	25172



Inlet and Outlet Check Valves for Waters Instruments

#### ASI Check Valves for Waters Alliance® Model 2690

Description	Material	qty.	cat.#
Inlet and Outlet Cartridges	Sapphire & Ruby Ball & Seat	ea.	25160
Inlet and Outlet Cartridges	Ceramic Ball & Seat	ea.	25162

### Valves for HPLC

Our valves have low internal volumes and are rated to 15,000psi (103,421kPa). They feature a 2-piece stem assembly in which the rotating upper shank is coupled through a ball joint to a static lower stem. Only fingertight torque is required to make the seal.

Description	qty.	cat.#
Two-Way Through Valve for HPLC, 1/16" Fittings, 1/4-28, Stainless Steel, Includes Nuts and Ferrules	ea.	26400
Two-Way Angle Valve for HPLC, 1/16" Fittings, 1/4-28, Stainless Steel, Includes Nuts and Ferrules	ea.	26401
Three-Way Bottom Vent Valve for HPLC, 1/16" Fittings, 1/4-28, Stainless Steel, Includes Nuts and Ferrules	ea.	26402
Side Vent Valve for HPLC, 1/16" Fittings, 1/4-28, Stainless Steel, Includes Nuts and Ferrules	ea.	26403
Dual Stem Three Way Valve for HPLC, 1/16" Fittings, 1/4-28, Stainless Steel, Includes Nuts and Ferrules	ea.	26404
Prime/Purge Valve for HPLC, 1/4-28 Flanged Seat, Stainless Steel, with Tubing and Fittings	ea.	26406
Prime/Purge Valve Repair Kit for Prime/Purge Valve	kit	26407



Side Vent Valve

### In-Line Check Valves for HPLC

Our 316 stainless steel in-line check valves have a soft seat and 1/16" fittings. Nuts and ferrules are included.

Description	qty.	cat.#
Check Valve, Soft Seat, for HPLC, 1/16" Fittings, 1/4-28, Stainless Steel, Includes Nuts and Ferrules	ea.	26405





### High-Pressure Frit-Type In-Line Filter

Restek's high-pressure in-line filter is a stand-alone version of the Trident column protection system, specifically designed for ease of use, low dead-volume, and flexibility. The filter has a replaceable, PEEK™ encapsulated 316 stainless steel frit with a surface area of 12mm<sup>2</sup>. The standard frit with 2.0μm porosity may be replaced with an optional 0.5μm porosity frit. Use of this filter can greatly extend column life, thereby reducing costs and saving maintenance time. Tubing OD 1/16"; connectors—CPI.

Description	Porosity	qty.	cat.#
Frit-Type In-Line Filter	2.0μm	ea.	25041
Replacement Cap Frits: 4mm	0.5μm	5-pk.	25023
Replacement Cap Frits: 4mm	2.0μm	5-pk.	25022

### High-Pressure Cup-Type In-Line Filter

This high-pressure cup-type filter can be used in fluid streams operating to 15,000psi (103,421kPa). The cup-shaped filter elements have a large (2.5 cm<sup>2</sup>) surface area to give long operating lifetime. Mounted in screw-type adapters, they are easily removed for cleaning. Normally, backflushing and cleaning in an ultrasonic bath with an appropriate solvent will restore them. If they become permanently clogged, replacement elements are available.

Housings and all wetted parts are 316 stainless steel. Filters are packaged with gland nuts and ferrules. A bulkhead type fitting is available for thru-panel mounting. Tubing OD 1/16"; connectors—CPI.



Description	Porosity	qty.	cat.#
Cup-Type In-Line Filter	0.5μm	ea.	25000
Cup-Type In-Line Filter	2.0μm	ea.	25001
Replacement Filter Elements & Seals	0.5μm	2-pk.	25002
Replacement Filter Elements & Seals	2.0μm	2-pk.	25003

### Low-Pressure Slip-On Inlet Filter for Mobile Phase Reservoir

A type 316 stainless steel tip with a Tefzel® collar seals to a corrosion-resistant type 316 stainless steel filter element. The slip-on filter easily attaches to the pump inlet line, without the use of wrenches. The universal tip accommodates standard Teflon® tubing inner diameters. The cylindrical filter is standard 10μm porosity. 1/8" OD. Fits Altex, ISCO, LDC, Varian, Waters, PerkinElmer, and other pumps.



Description	qty.	cat.#
Slip-on Inlet Filter	ea.	25008

### Low-Pressure CPI Inlet Filter for Mobile Phase Reservoir

A 316 stainless steel knurled cap and Tefzel® CPI ferrule seal to 1/8" OD Teflon® tubing when finger-tightened onto the precision-machined filter holder. The filter element is replaceable. Standard 10μm porosity protects delicate pump components from particles but introduces very little pressure drop. 1/8" OD. May be used as a helium sparging diffuser.



Description	qty.	cat.#
CPI Inlet Filter	ea.	25009
Replacement Elements: 10μm filter	2-pk.	25010

### also available

Trident Direct high-pressure filter—  
protection against particulate matter.  
See [page 338](#) for details.



### Mobile Phase Sparge Filter; Inlet Filter

The 2µm helium sparge filter is an inexpensive way to prepare and maintain mobile phases free of dissolved gas. Both filters are made from 316 stainless steel and PEEK™ and are compatible with most solvents.

Description	qty.	cat.#
Mobile Phase Sparge Filter: 2µm	ea.	25311
Inlet Filter: 10µm	ea.	25312
Inlet Filter: 20µm	ea.	25313



### Last Drop Filter

The flat filter element sits parallel to the bottom of the mobile phase reservoir, allowing the filter to draw 98% of the mobile phase without drawing air into the system. Conventional cylindrical mobile phase filters begin to draw air into the system when approximately 10% of the solvent remains in the reservoir. The Last Drop Filter allows more analyses per batch of mobile phase and helps reduce hazardous waste. 22.1mm OD.

Description	qty.	cat.#
Last Drop Filter: 2µm	ea.	25314
Last Drop Filter: 10µm	ea.	25315



### Membrane Microfiltration Glassware

47mm filtration apparatus with fritted glass support is recommended for routine filtration of corrosive liquids and removal of particles from HPLC solvents. The ground joint connection eliminates phthalate contamination that can occur when using silicone or neoprene stoppers. The support base has a coarse porosity glass frit and an integral vacuum connection, located above the drip tip to prevent contamination of the vacuum line with filtrate droplets. Each apparatus includes a funnel, an anodized aluminum clamp, a 47mm fritted glass support base, and a filtration flask.

All-Glass Microfiltration Apparatus	qty.	cat.#
300mL Funnel, 1000mL Flask	ea.	KT953825-0000
500mL Funnel, 2000mL Flask	ea.	KT953835-0000
1000mL Funnel, 4000mL Flask	ea.	KT953845-0000
Replacement Parts for Microfiltration Apparatus	qty.	cat.#
40/35 PTFE Joint Sleeve	6-pk.	KT676001-4035
Flask Cap, 40/35 Outer Joint	ea.	KT953830-0000
Fritted Glass Support, 47mm, 40/35 Joint	ea.	KT953826-0000
Glass Funnel, 47mm, 100mL	ea.	KT953761-0000
Glass Funnel, 47mm, 300mL	ea.	KT953751-0000
Glass Funnel, 47mm, 500mL	ea.	KT953771-0000
Glass Funnel, 47mm, 1000mL	ea.	KT953781-0000
Flask, 1000mL, 40/35 Joint	ea.	KT953827-0000
Flask, 2000mL, 40/35 Joint	ea.	KT953828-0000
Flask, 4000mL, 40/35 Joint	ea.	KT953829-0000
Aluminum Clamp, 47mm	ea.	KT953753-0000
Membrane Filters	qty.	cat.#
Polypropylene Membrane Filters, 47mm, 0.45µm	100-pk.	26396
Polypropylene Membrane Filters, 47mm, 0.22µm	100-pk.	26397
Nylon Membrane Filters, 47mm, 0.45µm	100-pk.	26398
Nylon Membrane Filters, 47mm, 0.22µm	100-pk.	26399



— new!



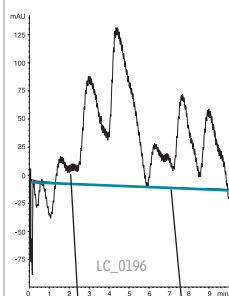
Polypropylene Membrane Filters

### tech tip

#### Mobile Phase Additives

Mobile phase additives such as triethylamine, trifluoroacetic acid, and ion-pairing reagents can compete with sample ions, decreasing sensitivity and, in some cases, reducing sample ion intake into the MS. To obtain symmetric peaks and/or sufficient retention, use base deactivated, state-of-the-art Type B silica packings that minimize the need for additives.

### Degasys Ultimate Degasser provides highly stable baselines



Ultimate Degasser Off  
Ultimate Degasser On

Mobile Phase: water:methanol  
50:50  
Flow: 1.0 mL/min.  
Det.: UV @ 210nm

### Mobile Phase Degasser

Dissolved oxygen can cause flow rate instability and increased baseline noise. Also, it has a quenching effect on fluorescence detection and increases the background of UV detectors. Dissolved gases can out-gas in the HPLC system, forming bubbles in check valves, at connections, or in detector flow cells.

In-line vacuum degassing is more effective at removing dissolved gas from mobile phases than sonication or helium sparging. In-line degassers work by withdrawing gas across a gas-permeable membrane encased in a sealed chamber. Traditionally, the membrane has been made of PTFE tubing, but the Degasys Ultimate Degasser uses tubing composed of an amorphous fluoropolymer that is 200 to 300 times more gas permeable than PTFE. This translates into the ability to use shorter tubing for removing dissolved gas. This new material also has better tubular burst strength than PTFE. To prevent cross contamination, each channel on this Degasys unit is individually encased within its own vacuum chamber.



### Specifications:

Residual Oxygen <sup>1</sup>	Pressure Loss <sup>1</sup>	Internal Volume	Wetted Parts	Max Flow Rate
0.9ppm	0.24psi (1.65kPa)	500 $\mu$ L	Teflon <sup>®</sup> AF, PTFE, ETFE, PPS	7mL/min./channel

<sup>1</sup>At a flow rate of 1mL/min.

Description	qty.	cat.#
110V Mobile Phase Degasser (4 Channel, 7mL/min./channel)	ea.	25189
220V Mobile Phase Degasser (4 Channel, 7mL/min./channel)	ea.	25194

Do not use the Degasys system with solutions containing TFA at concentrations greater than 5%.

### Solvent Debubbler

Bubbles in an HPLC system can cause check valve malfunctions and pump cavitation, seriously affecting pump performance. The debubbler removes bubbles from the fluid stream before it enters the pump.

Special geometry at the base of the housing allows bubbles entrained in the inlet fluid stream to rise and be trapped in the reservoir. The gas/liquid interface is easily visible through the translucent wall of the device. Loosening the airtight cap releases the trapped gas. The debubbler is fitted with a bracket and universal connecting tips.



Description	qty.	cat.#
Solvent Debubbler with Bracket	ea.	25014

### Sonic Debubbler

- Fast.
- Easy to use.
- Less solvent waste; less clean-up.

Just touch the Sonic Debubbler to the inlet line or check valve — sonic vibrations will quickly dislodge or redissolve trapped air bubbles. Reduces downtime or conversion time from one mobile phase to another.



Description	qty.	cat.#
Sonic Debubbler (110V)	ea.	20444
Sonic Debubbler (220V)	ea.	25098

**Opti-Cap™ Bottle Top**

The most economical way to helium-sparge and deliver HPLC mobile phases. The Opti-Cap™ top fits all standard GL45 bottles and has two 1/8-inch holes and one 1/16-inch hole for tubing.

Description	qty.	cat.#
Opti-Cap™ (Cap and PEEK™ Plug)	ea.	25300
Opti-Cap™ Kit (Opti-Cap™, 3 meters of tubing, sparging filters)	kit	25301
Opti-Cap™ Kit with 1L Bottle	kit	25302
Opti-Cap™ Kit with 2L Bottle	kit	25303
Related items and replacement parts	qty.	cat.#
SS Mobile Phase Sparge Filter: 2µm	ea.	25311
Mobile Phase Inlet Filter: 10µm	ea.	25312
Teflon® Tubing, 1/8" OD x 0.094" ID x 3m (2.4mm ID)	3m	25307
Teflon® Tubing, 1/8" OD x 0.063" ID x 3m (1.6mm ID)	3m	25306
PEEK™ Plug, 1/4"-28 threads	3-pk.	25319
1L Graduated Safety-Coated Bottle – GL-45 threads	ea.	25304
2L Graduated Safety-Coated Bottle – GL-45 threads	ea.	25305



Opti-Cap™ Kit with bottle

**Eco-Cap Bottle Top, PTFE**

Fits all standard GL-45 bottles; has two 1/8-inch holes and one 1/16-inch hole for tubing.

Description	qty.	cat.#
Eco-Cap Bottle Top, includes 1 Male Luer Plug	ea.	25395

also **available**

See [page 352](#) for Hub-Cap bottle tops, adapters, and filter kits.

**Technical Service Specialists**

Al Carusone, Tom Bloom, Jonathan Keim, Tim Herring, Alan Sensue, Terry Reid



Hub-Cap (assembly of the bottle cap and plug)

### Hub-Cap 4 Liter Bottle Tops

Most bottles use a GL45 cap. New Hub-Cap bottle tops are a great way to neatly keep your mobile phase lines where they belong. Use instead of parafilm, aluminum foil, or tape on your mobile phase reservoirs.



Description	qty.	cat.#
Hub-Cap (assembly of the bottle cap and plug)	kit	26541
Hub-Cap Multi-pack	3-pk.	26542



Hub-Cap Adapter

Hub-Cap Adapter and Opti-Cap™

### Hub-Cap Adapters

Allow the use of the Opti-Cap™ with 4-liter solvent bottles.

Description	qty.	cat.#
Hub-Cap Adapter	ea.	26538
Hub-Cap Adapter Multi-pack	3-pk.	26539
Hub-Cap Adapter and Opti-Cap™	kit	26540

**new!**

### Hub-Cap Filter Kit

Transfer and filter mobile phase in a single step!

Kit includes: bottle adapter, bottle adapter nut, filter inlet cap, grid support, vacuum hose barb, tube compression fitting, 47mm grid, 47mm .22µm filter membrane, 47mm .45µm filter membrane, 1/4" OD x 1/8" ID ultra chemical resistant, Teflon® FEP lined Tygon® tubing (3'), 6" x 6" box with shrink wrap insert



Hub-Cap Filter Kit



Unscrew and lift off top.



Place membrane filter on top of grid.



Reattach top.



Connect vacuum line to side port.

Description	qty.	cat.#
Hub-Cap Filter Kit	kit	26395
<b>Replacement Membrane Filters</b>	<b>qty.</b>	<b>cat.#</b>
Polypropylene Membrane Filters, 47mm, 0.45µm	100-pk.	26396
Polypropylene Membrane Filters, 47mm, 0.22µm	100-pk.	26397
Nylon Membrane Filters, 47mm, 0.45µm	100-pk.	26398
Nylon Membrane Filters, 47mm, 0.22µm	100-pk.	26399



Polypropylene Membrane Filters

## Sidewinder Column Heater

- Easy to set up!
- Operation range: 5°C above ambient to 85°C, ±1°C.
- Lightweight, compact design fits in small spaces.
- Column holder can be placed in any orientation.

This unique design completely encloses any HPLC analytical column up to 25cm in length. Two lengths of heater jackets are available: the short column holder accommodates columns up to 10cm in length, while the long column holder holds columns up to 25cm in length. The control module provides optimum heating performance, accuracy to within 1°C, and stability to within 0.1°C. The new Sidewinder controller has fast 10Hz sampling for improved responsiveness. Power requirements: 24V control unit for maximum stability; RS232 control allows external programming.

Description	qty.	cat.#
Temperature Control Module and Long Column Holder (25cm)	ea.	26516
Temperature Control Module and Short Column Holder (10cm)	ea.	26517



Sidewinder temperature control module

## Sidewinder Heater/Cooler Temperature Control Module

- Operation range: 5-55°C, ±0.2°C.
- Ability to program multiple temperature points.
- Accommodates columns up to 30cm in length and 7.8mm ID.
- Compact design.



The Sidewinder heater/cooler unit has a doubly insulated cover to maintain the programmed temperature to within 0.2°C. The 24V control unit provides maximum stability and rapid equilibration times; RS232 control allows external programming.

Description	qty.	cat.#
Sidewinder Heater/Cooler Temperature Control Module	ea.	26518

## Mobile Phase Pre-heater

- Heats mobile phase before it enters a heated column.
- Minimizes temperature changes, to help keep analyte peaks sharp.

Description	qty.	cat.#
Mobile Phase Pre-heater	ea.	22484



## Super-Clean™ Gas Trapping System for LC/MS

- Changing filters is quick and easy.
- Up to 20L of hydrocarbon-free nitrogen per minute.

The Super-Clean™ Gas Trapping System is the latest technology in cartridge-style gas filtration for purifying nitrogen, and is ideal for use in LC/MS systems. The two-position base plate (installed in the gas line) allows cartridges to be exchanged without introducing oxygen into the system. Spring-loaded check valves seal when a cartridge is removed and open only when a new cartridge has been locked in place. There is no need for loosening and tightening fittings every time you change cartridges, and your system cannot become contaminated during the changing process.

To meet the high flow needs of the LC/MS system, the activated charcoal-filled cartridges are positioned and connected in parallel. The incoming gas stream is split equally between the cartridges, and the two streams are rejoined after purification but before the gas exits the base plate. This approach allows longer contact between the nitrogen and the adsorbent, ensuring higher gas purity and eliminating a potential source of contaminants to your analyses.

A handy date wheel, included with the system, indicates the cartridge installation date and the recommended replacement date.

Description	qty.	cat.#
Super-Clean™ Gas-Trapping System (2-position base plate, 2 charcoal filters)	ea.	22062
2-Position Base Plate (1/4" Fittings) for use with hydrocarbon filters (cat.# 22061)	ea.	22060
Replacement Hydrocarbon (Charcoal) Filters	2-pk.	22061

2-Position Base Plate



### it's a fact

A Super-Clean™ quick-change cartridge system efficiently removes hydrocarbons from nitrogen!



Charcoal Filters



PEEK™ Survival Kit



**Terry Reid**  
Technical Service  
Specialist  
9+ years of service!

### PEEK™ Survival Kit for HPLC

The PEEK™ Survival Kit is an invaluable parts kit that contains tubing, fittings, and tools essential for setting up and maintaining your HPLC system: PEEK™ tubing, connectors, and elbows, Teflon® tubing, a tubing cutter and extra blades, a ValvTool wrench, open-end wrenches, and more.

#### For start-up and maintenance in all HPLC systems.

Description	qty.	cat.#
PEEK™ Survival Kit for HPLC	kit	25322

#### Contents:

Description	qty.	cat.#
PEEK™ Column Connector (beige, round body)	10-pk.	25015
PEEK™ Tubing, 1/16" OD x 0.005" ID x 3m (red stripe)	ea.	25065
PEEK™ Tubing, 1/16" OD x 0.007" ID x 3m (yellow stripe)	ea.	25066
PEEK™ Tubing, 1/16" OD x 0.010" ID x 3m (blue stripe)	ea.	25067
PEEK™ Tubing Elbow 90°	5-pk.	25308
PEEK™ Tubing Elbow 180°	5-pk.	25309
Teflon® Tubing, 1/8" OD x 0.063" ID x 3m (1.6mm ID)	3m	25306
Teflon® Tubing, 1/8" OD x 0.094" ID x 3m (2.4mm ID)	3m	25307
Tubing Clip	5-pk.	25310
ValvTool Wrench	ea.	25321
Open-End Wrenches (1/4" x 5/16")	2-pk.*	20110
Clean-Cut™ Tubing Cutter	ea.	25069
Replacement Blade for Clean-Cut™ Cutter	ea.	25070
PEEK™ Union Connector 1/16"	2-pk.	25323
Mobile Phase Sparge Filter: 2µm	ea.	25311
Inlet Filter: 10µm	ea.	25312

\*Kit contains 1 wrench, replacement (cat.# 20110) is a 2-pk.

### Stainless Steel Survival Kit for HPLC

The stainless steel survival kit contains a wide range of tubing, fittings, and tools necessary to set up and maintain your HPLC system: a selection of lengths and IDs of 1/16-inch tubing, plus nuts, ferrules, a ValvTool wrench, and a zero-dead-volume union.

Description	qty.	cat.#
Stainless Steel Survival Kit for HPLC	kit	25097

#### Contents:

Description	color	qty.	cat.#
HPLC Capillary Tubing, SS, 1/16" x 0.005" x 5cm	red	3-pk.	25240
HPLC Capillary Tubing, SS, 1/16" x 0.005" x 10cm	red	3-pk.	25241
HPLC Capillary Tubing, SS, 1/16" x 0.005" x 20cm	red	3-pk.	25242
HPLC Capillary Tubing, SS, 1/16" x 0.005" x 30cm	red	3-pk.	25243
HPLC Capillary Tubing, SS, 1/16" x 0.007" x 5cm	gray	3-pk.	25244
HPLC Capillary Tubing, SS, 1/16" x 0.007" x 10cm	gray	3-pk.	25245
HPLC Capillary Tubing, SS, 1/16" x 0.007" x 20cm	gray	3-pk.	25246
HPLC Capillary Tubing, SS, 1/16" x 0.007" x 30cm	gray	3-pk.	25247
HPLC Capillary Tubing, SS, 1/16" x 0.010" x 5cm	blue	3-pk.	25248
HPLC Capillary Tubing, SS, 1/16" x 0.010" x 10cm	blue	3-pk.	25249
HPLC Capillary Tubing, SS, 1/16" x 0.010" x 20cm	blue	3-pk.	25250
HPLC Capillary Tubing, SS, 1/16" x 0.010" x 30cm	blue	3-pk.	25251
HPLC Capillary Tubing, SS, 1/16" x 0.020" x 5cm	yellow	3-pk.	25252
HPLC Capillary Tubing, SS, 1/16" x 0.020" x 10cm	yellow	3-pk.	25253
HPLC Capillary Tubing, SS, 1/16" x 0.020" x 20cm	yellow	3-pk.	25254
HPLC Capillary Tubing, SS, 1/16" x 0.020" x 30cm	yellow	3-pk.	25255
1/16" Rheodyne® Style Nut		10-pk.	25095
1/16" Rheodyne® Style Ferrule		10-pk.	25096
ValvTool Wrench		ea.	25321
1/16" Stainless Steel Ferrules		10-pk.	20286
1/16" Stainless Steel Nuts		10-pk.	20287
Zero-Dead-Volume Internal Union		ea.	20148



Stainless Steel Survival Kit

### it's a fact

Survival Kits are convenient and economical, compared to ordering individual items!

**PEEK™ Fitting Extractor**

Drill into the broken fitting, then screw the extractor into the fitting and remove it easily. Eliminates the need for heat or other techniques that could damage your column.



Description	qty.	cat.#
PEEK™ Fitting Extractor	ea.	25325



**PEEK™ Union Connector**

Allows you to quickly and reliably connect two pieces of 1/16-inch tubing. 0.3mm union bore. End fittings included.

Description	qty.	cat.#
PEEK™ Union Connector 1/16"	2-pk.	25323



**Zero-Dead-Volume Valco® Internal Union**

Ends of tubing seat squarely at bottoms of fitting details. 300 series stainless steel. For 1/16-inch OD tubing. Stainless steel ferrules included.

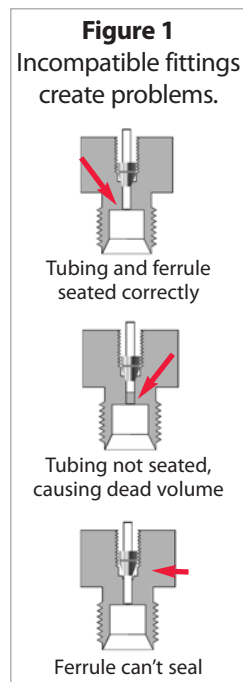
Description	Union Bore	Valco® #	qty.	cat.#
Internal Union	0.15mm	ZU1XC	ea.	20147
Internal Union	0.25mm	ZU1C	ea.	20148
Internal Union	0.75mm	ZU1	ea.	20149
Internal Union	1/16"	ZU1T	ea.	20150



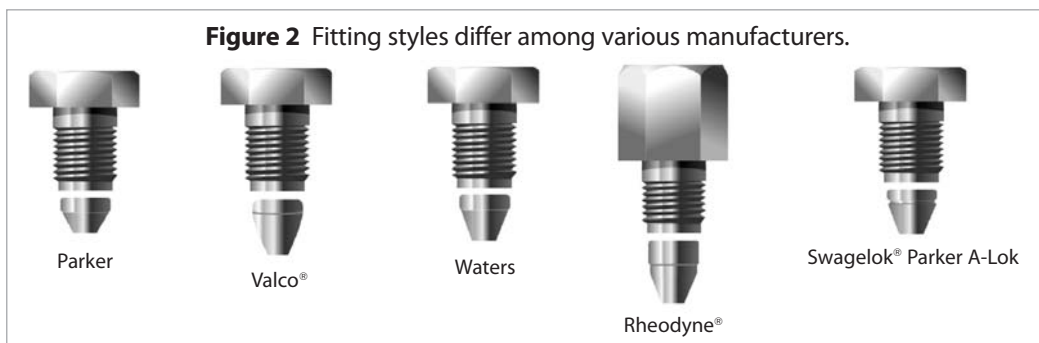
**Improving Column Connections**

A good connection is necessary for trouble-free chromatography. Connecting incompatible fittings from different manufacturers can result in leaks, poor peak shape, and increased void volume (Figure 1). Each type of end-fitting has a unique seat depth or style. Generally, Restek, Valco®, Parker, and Upchurch® Scientific fittings are interchangeable; whereas Waters, SSI, Rheodyne®, and Gasukura fittings are not (Figure 2).

Our wrenchless universal 10-32 PEEK™ column connector (cat.# 25015, page 357) can be used with any style of end fitting, and all 1/16-inch tubing. It is reusable and will adjust to any seat, depth, or style.



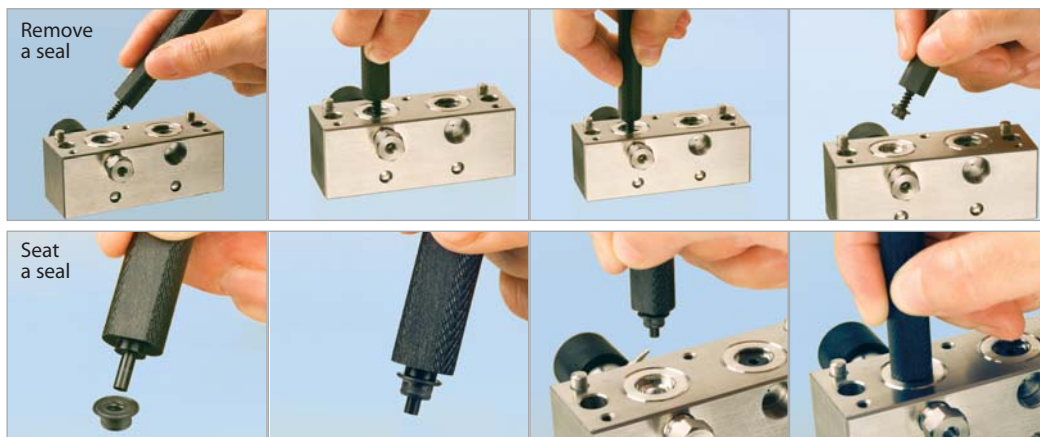
**Figure 2** Fitting styles differ among various manufacturers.





### HPLC Piston Seal Insertion Tool

Simplify pump maintenance: use one end to remove your old seal, then simply slip your new seal on the other end and push it flush into position. The tool cannot mar the surrounding metal surface of the pump housing.



Use the flat side of the Piston Seal Insertion Tool to seat a Waters face seal.

Description	qty.	cat.#
HPLC Piston Seal Insertion Tool	ea.	21356

### Secure-Fit Fittings

A good connection between HPLC components is necessary for trouble-free chromatography. Secure-Fit connectors from Restek and Selerity Technologies ensure a consistent, leak-free seal—and they eliminate excess dead volume! An internal spring mechanism holds the capillary tubing at the proper depth in the female fitting. This seal is maintained while you finger-tighten the nut. These fittings are available in stainless steel or PEEK™, and in a variety of tubing lengths and internal diameters.

#### Secure-Fit Fittings—Single Connectors

Length	Stainless Steel			PEEK™		
	0.005" ID	0.007" ID	0.010" ID	0.005" ID	0.007" ID	0.010" ID
6cm	25181	25185	25190	25230	25234	25217
10cm	25182	25186	25191	25231	25235	25218
20cm	25183	25187	25192	25232	25236	25219
30cm	25184	25188	25193	25233	25237	25220
50cm	26510	26511	26512	—	—	—

#### Secure-Fit Fittings—Two Connectors

Length	Stainless Steel			PEEK™		
	0.005" ID	0.007" ID	0.010" ID	0.005" ID	0.007" ID	0.010" ID
10cm	25208	25211	25214	25221	25224	25227
20cm	25209	25212	25215	25222	25225	25228
30cm	25210	25213	25216	25223	25226	25229
50cm	26513	26514	26515	—	—	—



Stainless Steel  
Secure-Fit Fitting

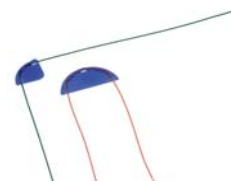


PEEK™  
Secure-Fit Fitting—Single Connector

**PEEK™ Tubing Elbows**

Tubing Elbows (90° and 180°) are ideal for routing 1/16-inch PEEK™ tubing through your system. Simply snap the tubing into the elbow. Prevent pinching of PEEK™ tubing which can cause high pressure.

Description	qty.	cat.#
PEEK™ Tubing Elbow 90°	5-pk.	25308
PEEK™ Tubing Elbow 180°	5-pk.	25309

**Tubing Dressing Tool**

Opens stainless steel tubing bore and removes burrs. For 1/16-inch OD tubing or 1/8-inch OD tubing.

Description	qty.	cat.#
1/16" Tubing Dressing Tool	ea.	20188
Replacement Insert for 1/16" Tubing Dressing Tool	ea.	20189
1/8" Tubing Dressing Tool	ea.	20190
Replacement Insert for 1/8" Tubing Dressing Tool	ea.	20191

**Clean-Cut™ Tubing Cutter**

- Burr-free, perpendicular cuts that will not distort the tubing OD or close the ID.
- Use on PEEK™, Teflon®, Tefzel®, other polymeric tubing.

Description	qty.	cat.#
Clean-Cut™ Tubing Cutter	ea.	25069
Replacement Blade for Clean-Cut™ Cutter	ea.	25070

For stainless steel tubing cutters, see page 251 or 397 or visit [www.restek.com](http://www.restek.com).

**Universal 10-32 PEEK™ Column Connectors and Plugs**

Universal PEEK™ Connectors allow easy installation of all 1/16-inch tubing, including stainless steel. See "Improving Column Connections" data on page 355.

Description	qty.	cat.#
PEEK™ Column Connector (beige, round body)	10-pk.	25015
PEEK™ Column Plug (black)	10-pk.	25016
PEEK™ Fingertight Fittings (blue, flat-sided)	10-pk.	25324



PEEK™ Column Connector



PEEK™ Fingertight Fittings

**Rheodyne® Style Nut and Ferrule**

Replacement long nut for connecting stainless steel tubing to a Rheodyne® 6-port valve or other Rheodyne® part.

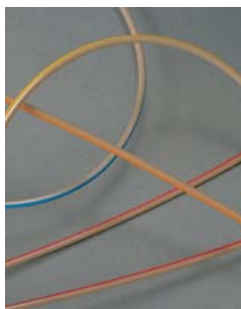
Description	qty.	cat.#
1/16" Rheodyne® Style Nut	10-pk.	25095
1/16" Rheodyne® Style Ferrule	10-pk.	25096

**ValvTool Wrench**

The ValvTool is a time-saving device that provides easy access to many hard-to-reach Rheodyne® or Valco® valves. For 1/4-inch nuts.

Description	qty.	cat.#
ValvTool Wrench	ea.	25321





### Inert PEEK™ Tubing

- Replaces stainless steel, titanium, Teflon® or Tefzel® tubing.
- Less oxygen permeable and more temperature resistant (to 250°C) than Teflon® or Tefzel® tubing.
- Use with PEEK™ fingertight or flangeless fittings.
- Use to 7,000psi (48,263kPa).

Description	Color Code	qty.	cat.#
PEEK™ Tubing, 1/16" OD x 0.0025" ID x 1m	pink dash stripe	3-pk.	25320
PEEK™ Tubing, 1/16" OD x 0.005" ID x 3m	red stripe	ea.	25065
PEEK™ Tubing, 1/16" OD x 0.007" ID x 3m	yellow stripe	ea.	25066
PEEK™ Tubing, 1/16" OD x 0.010" ID x 3m	blue stripe	ea.	25067
PEEK™ Tubing, 1/16" OD x 0.020" ID x 3m	orange stripe	ea.	25068

### HPLC Stainless Steel Capillary Tubing

- 316 grade stainless steel.
- Precise pre-cut lengths.
- Smooth surface finish.
- Ultra clean.

Whether you need to replace system tubing as part of your troubleshooting or are looking to reduce the dwell volume of your system as you move to narrower columns, Restek has the quality tubing in the lengths and IDs you need. Each ID is color-coded so it is easy to identify and replace correctly.

Length	qty.	0.005" ID (red) cat.#	0.007" ID (gray) cat.#	0.010" ID (blue) cat.#	0.020" ID (yellow) cat.#
1/16" OD Tubing					
5cm	3-pk.	25240	25244	25248	25252
10cm	3-pk.	25241	25245	25249	25253
20cm	3-pk.	25242	25246	25250	25254
30cm	3-pk.	25243	25247	25251	25255

### Teflon® Tubing

- Ideal for mobile phase inlet lines.
- Chemically inert.
- Use to 500psi (3,447kPa) and 80°C.

Description	qty.	cat.#
Teflon® Tubing, 1/8" OD x 0.063" ID x 3m (1.6mm ID)	3m	25306
Teflon® Tubing, 1/8" OD x 0.094" ID x 3m (2.4mm ID)	3m	25307

### Tubing Clip

Securely holds 1/16-inch or 1/8-inch tubing in beaker, flask, or bottle up to 4mm thick.

Description	qty.	cat.#
Tubing Clip	5-pk.	25310

## QuickSplit™ Post-Column Flow Splitters

Fluid resistor technology eliminates adjustments to capillary tubing for optimizing split ratio. Wide range of interchangeable resistors available.

### Fixed Flow Splitters for HPLC & LC/MS

- Split ratio not affected by changes in viscosity or pressure.
- High operating pressure limit: 10,000psi (68,948kPa).
- Low dead volume—negligible effect on analyte bandwidth.
- Total flow: 0.1–5.0mL/min.

### Adjustable Flow Splitter

- Adjustable metering valve gives convenient control of split ratio.
- Split ratio not affected by changes in viscosity or pressure.
- High operating pressure limit: 5,000psi (34,474kPa).
- Low dead volume—negligible effect on analyte bandwidth.
- Total flow: 0.1–5.0mL/min.

Description	Split Ratio	qty.	cat.#
Binary Fixed Flow Splitter	100:01:00	ea.	25326
	50:01:00	ea.	25327
	20:01	ea.	25328
	10:01	ea.	25329
	5:01	ea.	25330
Replacement Fixed Flow Splitter Resistor Set	100:01:00	ea.	25331
	50:01:00	ea.	25332
	20:01	ea.	25333
	10:01	ea.	25334
	5:01	ea.	25335
Adjustable Flow Splitter	5:1 to 100:1	ea.	25336
	1:1 to 20:1	ea.	25337
	50:1 to 1000:1	ea.	26416
Replacement Adjustable Flow Splitter Resistor Set	5:1 to 100:1	ea.	25338
	1:1 to 20:1	ea.	25339



### also available

We are pleased to offer HPLC accessory items from Analytical Scientific Instruments (ASI). ASI specializes in HPLC system components and parts that often exceed the original equipment manufacturer's performance. See [page 347](#).

## HyperShear™ HPLC Mixers

- Reduced baseline noise.
- Increased sensitivity.
- Improved gradient accuracy, for more reproducible results.
- Increased reaction efficiency in post-column derivatization.

An efficient cross-flow shearing mechanism and interchangeable cartridges produce vortex shear mixing over a wide range of flows. Stainless steel or PEEK™.

### HyperShear™ Static In-Line Mixers

Description	qty.	Stainless Steel		qty.	PEEK™	
		cat.#			cat.#	
1µL In-Line Mixer	ea.	26409		ea.	26410	
25µL In-Line Mixer	ea.	26411		ea.	26412	
50µL In-Line Mixer	ea.	25341		ea.	26413	
150µL In-Line Mixer	ea.	25342		ea.	26414	
250µL In-Line Mixer	ea.	25343		ea.	26415	



### Ternary Tee Mixer

Description	qty.	cat.#
25µL Ternary Tee Mixer	ea.	25138

**FlatLine™ Pulse Damper**

- Rupture-proof, no diaphragm—minimal risk of failure or leaks.
- Clean flush-out design—no sample carryover.
- Low internal volume—negligible effect on analyte bandwidth.

The ASI FlatLine™ Pulse Damper combines performance and reliability in a simple, easy-to-use housing. Standard 10-32 inlet and outlet ports allow quick connection into virtually any HPLC system. Solid core technology provides reliable long-term operation without the down time associated with ruptured or leaking membrane dampers. 600–700 $\mu$ L internal volume at ambient pressure.

Description	qty.	cat.#
FlatLine™ Pulse Damper	ea.	25340

**MicroPulse™ Pulse Dampers**

- Compact unit (2.5" x 1.5") can be placed almost anywhere.
- Small, 150 $\mu$ L dead volume at atmospheric pressure.
- PEEK™ unit can withstand pressures to 5,000psi (34,474kPa).
- 316 Stainless steel unit can withstand pressures to 6,000psi (41,369kPa).

Improves system baseline stability while increasing the total system volume by only 150 $\mu$ L. The MicroPulse™ pulse damper is ideal for applications where minimizing the total system volume is critical. Stainless steel and PEEK™ options for a wide range of applications.

Description	qty.	cat.#
MicroPulse™ Pulse Damper, Stainless Steel	ea.	25238
MicroPulse™ Pulse Damper, PEEK™	ea.	25239



LO-Pulse®  
Pulse Damper Kit

**LO-Pulse® Pulse Damper**

The LO-Pulse® Pulse Damper is a patented, wide-dynamic-range 316 stainless steel device that smooths pulsations and maintains constant flow at system pressures up to 6,000psi (41,369kPa). The flow path volume is only 0.9mL and the path is efficiently swept, eliminating solvent memory effects when changing mobile phases.

The LO-Pulse® pulse damper also is available in a space-saving, economical kit that includes hardware for mounting the pulse damper on a bracket, or for installing feet on it for bench-top use.

Description	qty.	cat.#
Model LP-21 LO-Pulse® Pulse Damper	ea.	25012
Pulse Damper Kit	kit	25013

**Backpressure Regulators**

Backpressure regulators can improve detector performance by preventing bubble formation in the detector flow cell. They also are useful in post-column reaction lines and between detectors and fraction collectors in preparatory work. Regulators are superior to more specific alternative solutions, like small-bore tubing, in which pressure varies with flow rate.

Our end-of-line and flow-through backpressure regulators are adjustable to assure constant backpressure over a wide range of mobile-phase viscosities and flow rates. The end-of-line model is available with 1/4-28 plastic flange-type fittings or high-pressure 1/16-inch compression fittings; this design adjusts from 15 to 60psi (103 to 414kPa). The flow-through design has 1/16-inch compression fittings and is adjustable from 7 to 75psi (48 to 517kPa).

Description	qty.	cat.#
A) Backpressure Regulator: end-of-line, 1/16-inch OD tubing, flanged	ea.	25017
B) Backpressure Regulator: end-of-line, high-pressure seat	ea.	25018
C) Backpressure Regulator: flow-through, 5 $\mu$ L internal volume	ea.	25020

### HPLC Column Tubing

Restek tubing is manufactured from fine, chromatographic-grade 316 stainless steel. It is corrosion resistant, ultrasonically cleaned and passivated. We polish the tubing and promise a burr-free cut. You can use this tubing immediately—there is no need for any additional treatment.

Length	2.1mm ID		3.2mm ID		4.6mm ID	
	cat.#		cat.#		cat.#	
<b>1/4" OD Tubing</b>						
30mm	25100		25106		25112	
50mm	25101		25107		25113	
100mm	25102		25108		25114	
150mm	25103		25109		25115	
200mm	25104		25110		25116	
250mm	25105		25111		25117	



### 1/4-Inch HPLC Frits

We manufacture our frits from fine, chromatographic-grade 316 stainless steel, and we offer sizes to fit most column and pore sizes. To choose the correct frit, check its pore size compatibility with the particle size of the packing in the column (see chart at right). If the packing has a smaller particle size than the pore size of the frit, the packing can clog the frit.

ID	Pore Size	qty.	cat.#
4.6mm	2.0µm	10-pk.	25071
4.6mm	0.5µm	10-pk.	25072
3.2mm	2.0µm	10-pk.	25073
3.2mm	0.5µm	10-pk.	25074
2.1mm	2.0µm	10-pk.	25075
2.1mm	0.5µm	10-pk.	25076



Packing particle size	Use this pore size:
3–4µm	0.5µm
5–20µm	2.0µm

### Column End-Fittings

1/4-inch end-fittings are compatible with Valco® and Parker fittings.

Description	qty.	cat.#
Column End-Fitting for 4.6mm Column	ea.	25077
Column End-Fitting Flat Bottom	ea.	25078



### Empty Chromatography Columns

- 316 stainless steel tubing complete with end-fittings, frits, nuts, and ferrules.
- Preassembled prior to shipment, unless otherwise requested.
- Internal 1/16-inch seats are compatible with Valco® and Parker fittings.

Length	2.1mm ID		3.2mm ID		4.6mm ID	
	cat.#		cat.#		cat.#	
<b>1/4" OD Tubing</b>						
30mm	25118		25124		25130	
50mm	25119		25125		25131	
100mm	25120		25126		25132	
150mm	25121		25127		25133	
200mm	25122		25128		25134	
250mm	25123		25129		25135	





**Restek Pack in a Box Kit**

Restek's Pack in a Box Kit is a complete column-packing system. Everything you need to pack your own analytical HPLC columns is included: pump, reservoir, column hardware, packing material, and system control software (computer not included). Detailed packing instructions and a DVD video also are included. The packing pump is electric, so no pressurized air is required. AC input requirement: 85-265 VAC.

Description	qty.	cat.#
Pack in a Box Kit	kit	26408

**HPLC Organizers\***



**Bill Grove**  
Instrument Innovations  
*2+ years of service!*



LCLocker™ HPLC Organizer



Deluxe BenchBooster™ Organizer



Mini pHPerch™ Storage Unit



TopLoader™ BalanceBank™ Storage Unit



HPLC 30-Column Storage Cabinet



Book Holders



Open Supply Bins, 13-bin unit



Glove Box Dispensers

Description	dimensions	qty.	cat.#
LCLocker™	24 x 12 x 6"	ea.	25149
BenchBooster™	24 x 7 x 12"	ea.	25150
Mini pHPerch™	13 x 12 x 6"	ea.	25147
TopLoader™	12 x 12 x 7"	ea.	25148
30 Column Cabinet	17 <sup>3</sup> / <sub>8</sub> x 15 x 2 <sup>1</sup> / <sub>8</sub> "	ea.	25159
Book Holder, Small	0.75" ID	ea.	25151
Book Holder, Large	1.5" ID	ea.	25152
Open Supply Bin, 4-bin Unit	24 x 12 x 10"	ea.	25153
Open Supply Bin, 5-bin Unit	12 x 16 x 10.5"	ea.	25154
Open Supply Bin, 13-bin Unit	12 x 7.5 x 12"	ea.	25155
Glove Box Dispenser, Single	5 <sup>3</sup> / <sub>8</sub> x 11 <sup>1</sup> / <sub>2</sub> x 4 <sup>1</sup> / <sub>2</sub> "	ea.	25156
Glove Box Dispenser, Double	10 <sup>3</sup> / <sub>8</sub> x 11 <sup>1</sup> / <sub>2</sub> x 4 <sup>1</sup> / <sub>2</sub> "	ea.	25157
Glove Box Dispenser, Triple	15 <sup>3</sup> / <sub>8</sub> x 11 <sup>1</sup> / <sub>2</sub> x 4 <sup>1</sup> / <sub>2</sub> "	ea.	25158

\*Please note: Accessories and supplies in photographs are not included.

### HPLC Pump Pressure Conversion Table

Pressure	psi	atm	kg/cm <sup>2</sup>	torr	kPa	bar	inches Hg
1 psi =	1	0.068	0.0703	51.713	6.8948	0.06895	2.0359
1 atm =	14.696	1	1.0332	760	101.32	1.0133	29.921
1 kg/cm <sup>2</sup> =	14.223	0.967	1	735.5	98.06	0.9806	28.958
1 torr =	0.0193	0.00132	0.00136	1	0.1330	0.00133	0.0394
1 kPa =	0.1450	0.00987	0.0102	7.52	1	0.0100	0.2962
1 bar =	14.5038	0.9869	1.0197	751.88	100	1	29.5300
1 in Hg =	0.49612	0.0334	0.0345	25.400	3.376	0.03376	1

Multiply units in the left-most column by the conversion factors listed in the columns to the right.

e.g., 10 psi x 0.068 = 0.68atm  
 10 bar x 29.5300 = 295.300 inches Hg

