

CHROMATOGRAPHY



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***Chromaflex[®], Flex-Column[®]
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Chromatography Columns***
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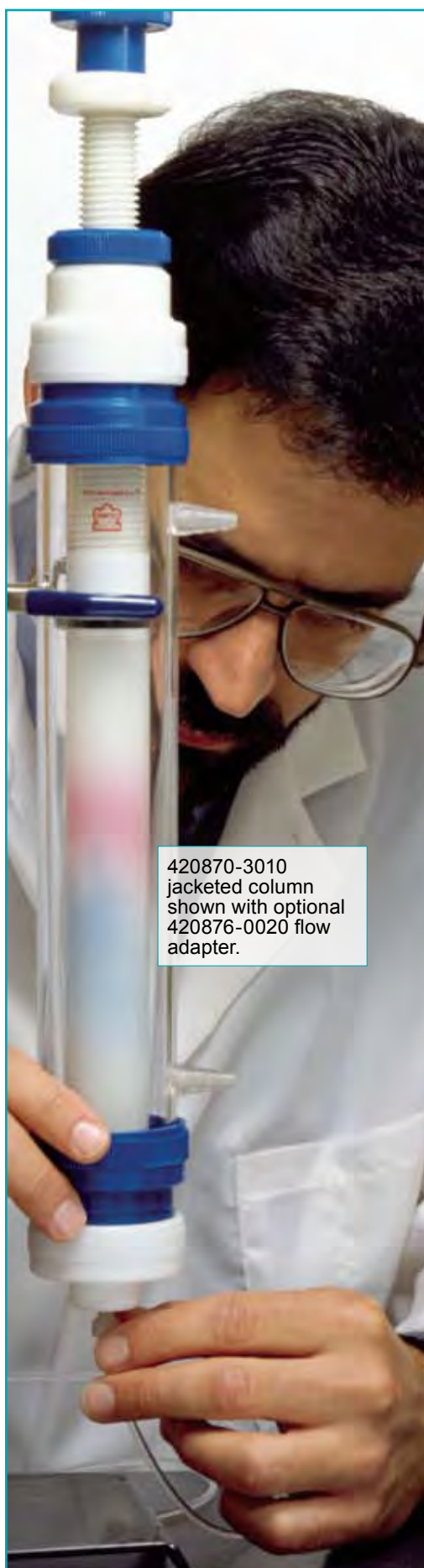
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420870-3010
jacketed column
shown with optional
420876-0020 flow
adapter.

CHROMAFLEX Columns

CHROMAFLEX Chromatography Columns have a unique design feature: PTFE shielded o-rings. Each end fitting has a thin PTFE layer that is curled over the o-ring to form a solvent resistant, leak free seal. CHROMAFLEX Columns can be used with all aqueous buffers without modification and with organic solvents when the optional PTFE bed supports are installed in the end fittings and flow adapters. CHROMAFLEX Columns are available in both standard and water jacketed versions.

Standard CHROMAFLEX Columns

Standard CHROMAFLEX Columns are available in three IDs (1.0, 2.5 and 4.8 cm) in five standard lengths (15, 30, 60, 100 and 120 cm). Each column is supplied with two PTFE end fittings with 20 µm porosity polyethylene bed supports, 5 feet PTFE tubing (1/16" OD tubing with 1.0 cm, 1/8" OD tubing with 2.5 & 4.8 cm), 2 flangeless tubing nuts and 2 flangeless ferrules.

Jacketed CHROMAFLEX Columns

Jacketed CHROMAFLEX Columns are provided with an acrylic water jacket to provide thermal control of temperature sensitive chromatographic separations. The acrylic jacket also acts as a safety shield. Jacketed columns are available in all of the standard CHROMAFLEX Column sizes and supplied with the same tubing, nuts and ferrules.

Flow Adapters

CHROMAFLEX Flow Adapters allow easy adjustment of the column bed volume. They are ideal for concentration and pH gradients, reverse flow separations, and gravity flow separations that require a high level of resolution and reproducibility. Flow adapters are available for all three standard ID columns.

Packing Reservoirs

The CHROMAFLEX Glass Reservoirs are ideal for packing gel slurries into columns and as buffer reservoirs for simple gravity flow chromatography. Each reservoir has been designed for easy mounting on all CHROMAFLEX Columns. The reservoir capacities are matched by column ID to take the amount of slurry required to pack the longest standard column. The reservoir end fitting has 1/4-28 threads for simple flangeless connection to a pump.

Flangeless 1/4-28 Fittings

All tubing connections to CHROMAFLEX Columns can be made with easy-to-use 1/4-28 flangeless fittings and either 1/16" OD, 1/8" OD or 1.8 mm OD tubing. Our complete line of fittings and adapters allow simple connection to any chromatography system.

Custom Length Columns

Certain applications may require a column length not found in our standard product offering. Please contact customer service for pricing and delivery details for custom length CHROMAFLEX Columns.

Specifications

Materials

Column Barrels:	Type I, Class A Borosilicate Glass
End Fitting:	Polytetrafluoroethylene (PTFE)
Bed Support:	High Density Polyethylene (HDPE)
Water/Safety Jacket:	Acrylic (jacketed columns only)
Jacket Sealing Rings:	Polypropylene (jacketed columns only)
Bed Support Porosity:	20 micron nominal (for standard bed support)
Maximum Pressure*:	1.0 cm ID Columns - 100 psi (6.9 bar) 2.5 cm ID Columns 75 psi (5.2 bar) 4.8 cm ID Columns - 50 psi (3.4 bar)
Temperature Range:	0 to 50 °C
Tubing Connections:	1/4-28 flangeless fittings
Recommended Sterilization Method:	Ethylene Oxide, 2N NaOH or 100% Ethanol (autoclaving is not recommended)

CHROMAFLEX® Standard Threaded Columns

Columns are supplied complete with glass barrel and 2 end fittings with 20 µm porosity HDPE bed supports. Each column is also supplied with 5 feet (1.5 m) of FEP tubing (1/16" OD with 1.0 cm; 1/8" OD with 2.5 and 4.8 cm), 2 flangeless tubing nuts and 2 flangeless ferrules.

Catalog Number	Column ID (cm)	Length (cm)	Volume (mL)	Max. Pressure* (psi/bar)	Case Qty.	Case Price
420830-1500	1.0	15	12	100/6.9	1	204.99
420830-3000	1.0	30	24	100/6.9	1	212.01
420830-6000	1.0	60	47	100/6.9	1	229.51
420830-1000	1.0	100	79	100/6.9	1	266.32
420830-1200	1.0	120	95	100/6.9	1	289.10
420830-1510	2.5	15	74	75/5.2	1	240.05
420830-3010	2.5	30	147	75/5.2	1	254.04
420830-6010	2.5	60	295	75/5.2	1	275.08
420830-1010	2.5	100	491	75/5.2	1	332.92
420830-1210	2.5	120	589	75/5.2	1	367.96
420830-1520	4.8	15	271	50/3.4	1	303.14
420830-3020	4.8	30	543	50/3.4	1	322.39
420830-6020	4.8	60	1086	50/3.4	1	353.93
420830-1020	4.8	100	1810	50/3.4	1	429.27
420830-1220	4.8	120	2172	50/3.4	1	467.84

Replacement Parts

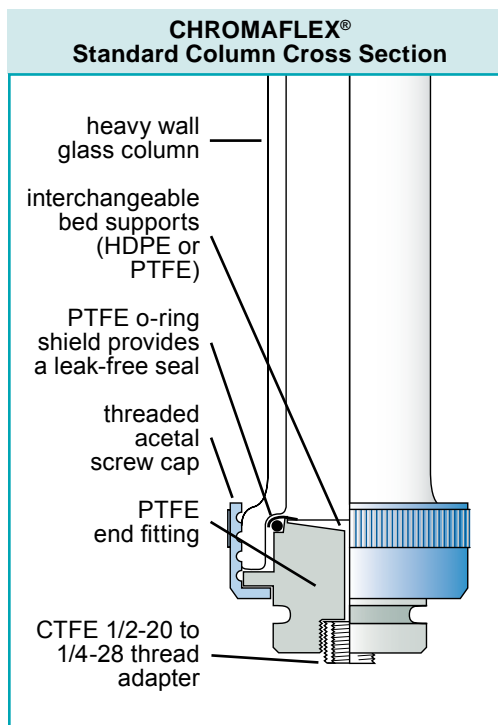
420831-1500	Glass Barrel Only, 1.0 x 15 cm	1	77.11
420831-3000	Glass Barrel Only, 1.0 x 30 cm	1	83.76
420831-6000	Glass Barrel Only, 1.0 x 60 cm	1	101.21
420831-1000	Glass Barrel Only, 1.0 x 100 cm	1	138.87
420831-1200	Glass Barrel Only, 1.0 x 120 cm	1	159.01
420831-1510	Glass Barrel Only, 2.5 x 15 cm	1	100.32
420831-3010	Glass Barrel Only, 2.5 x 30 cm	1	113.45
420831-6010	Glass Barrel Only, 2.5 x 60 cm	1	138.43
420831-1010	Glass Barrel Only, 2.5 x 100 cm	1	198.01
420831-1210	Glass Barrel Only, 2.5 x 120 cm	1	226.03
420831-1520	Glass Barrel Only, 4.8 x 15 cm	1	143.24
420831-3020	Glass Barrel Only, 4.8 x 30 cm	1	159.01
420831-6020	Glass Barrel Only, 4.8 x 60 cm	1	194.48
420831-1020	Glass Barrel Only, 4.8 x 100 cm	1	268.06
420831-1220	Glass Barrel Only, 4.8 x 120 cm	1	308.36
420832-2100	1.0 cm End Fitting w/ Bed Support	1	44.93
420832-2110	2.5 cm End Fitting w/ Bed Support	1	52.08
420832-2120	4.8 cm End Fitting w/ Bed Support	1	57.91
420811-2010	Bed Support, HDPE, 1.0 cm, 20 µm	10	52.08
420811-2020	Bed Support, HDPE, 2.5 cm, 20 µm	10	57.05
420811-2040	Bed Support, HDPE, 4.8 cm, 20 µm	10	63.08
420833-0000	Screw Cap, 1.0 cm	1	10.71
420833-0010	Screw Cap, 2.5 cm	1	11.67
420833-0020	Screw Cap, 4.8 cm	1	19.24

Accessories

420809-0510	Bed Support, PTFE, 1.0 cm, 5 µm	1	24.54
420809-0520	Bed Support, PTFE, 2.5 cm, 5 µm	1	34.00
420809-0540	Bed Support, PTFE, 4.8 cm, 5 µm	1	65.74
420809-1010	Bed Support, PTFE, 1.0 cm, 10 µm	1	24.54
420809-1020	Bed Support, PTFE, 2.5 cm, 10 µm	1	33.75
420809-1040	Bed Support, PTFE, 4.8 cm, 10 µm	1	67.71
420809-2010	Bed Support, PTFE, 1.0 cm, 20 µm	1	25.03
420809-2020	Bed Support, PTFE, 2.5 cm, 20 µm	1	33.75
420809-2040	Bed Support, PTFE, 4.8 cm, 20 µm	1	67.06

* CAUTION

Pressurized glassware should always be used with adequate safety shielding.



CHROMAFLEX® Jacketed Threaded Columns

Columns are supplied complete with glass barrel, water jacket and 2 end fittings with 20 µm porosity HDPE bed supports. Each column is also supplied with 5 feet (1.5 m) of FEP tubing (1/16" OD with 1.0 cm; 1/8" OD with 2.5 and 4.8 cm), 2 flangeless tubing nuts and 2 flangeless ferrules.



420870

Catalog Number	Column ID (cm)	Length (cm)	Volume (mL)	Max. Pressure* (psi/bar)	Case Qty.	Case Price
420870-1500	1.0	15	12	100/6.9	1	278.60
420870-3000	1.0	30	24	100/6.9	1	311.88
420870-6000	1.0	60	47	100/6.9	1	353.93
420870-1000	1.0	100	79	100/6.9	1	413.51
420870-1200	1.0	120	95	100/6.9	1	460.80
420870-1510	2.5	15	74	75/5.2	1	387.22
420870-3010	2.5	30	147	75/5.2	1	432.79
420870-6010	2.5	60	295	75/5.2	1	487.08
420870-1010	2.5	100	491	75/5.2	1	576.45
420870-1210	2.5	120	589	75/5.2	1	641.27
420870-1520	4.8	15	271	50/3.4	1	679.82
420870-3020	4.8	30	543	50/3.4	1	734.14
420870-6020	4.8	60	1086	50/3.4	1	809.47
420870-1020	4.8	100	1810	50/3.4	1	919.87
420870-1220	4.8	120	2172	50/3.4	1	1000.47

Replacement Parts

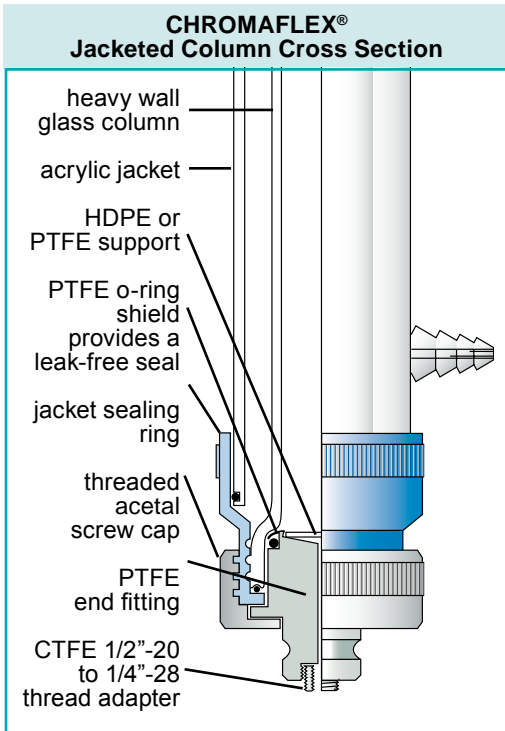
420831-1500	Glass Barrel Only, 1.0 x 15 cm	1	77.11
420831-3000	Glass Barrel Only, 1.0 x 30 cm	1	83.76
420831-6000	Glass Barrel Only, 1.0 x 60 cm	1	101.21
420831-1000	Glass Barrel Only, 1.0 x 100 cm	1	138.87
420831-1200	Glass Barrel Only, 1.0 x 120 cm	1	159.01
420831-1510	Glass Barrel Only, 2.5 x 15 cm	1	100.32
420831-3010	Glass Barrel Only, 2.5 x 30 cm	1	113.45
420831-6010	Glass Barrel Only, 2.5 x 60 cm	1	138.43
420831-1010	Glass Barrel Only, 2.5 x 100 cm	1	198.01
420831-1210	Glass Barrel Only, 2.5 x 120 cm	1	226.03
420831-1520	Glass Barrel Only, 4.8 x 15 cm	1	143.24
420831-3020	Glass Barrel Only, 4.8 x 30 cm	1	159.01
420831-6020	Glass Barrel Only, 4.8 x 60 cm	1	194.48
420831-1020	Glass Barrel Only, 4.8 x 100 cm	1	268.06
420831-1220	Glass Barrel Only, 4.8 x 120 cm	1	308.36
420832-4100	1.0 cm End Fitting w/ Bed Support	1	44.93
420832-4110	2.5 cm End Fitting w/ Bed Support	1	52.08
420832-4120	4.8 cm End Fitting w/ Bed Support	1	57.91
420811-2010	Bed Support, HDPE, 1.0 cm, 20 µm	10	52.08
420811-2020	Bed Support, HDPE, 2.5 cm, 20 µm	10	57.05
420811-2040	Bed Support, HDPE, 4.8 cm, 20 µm	10	63.08
420833-1000	Screw Cap, 1.0 cm	1	39.28
420833-1010	Screw Cap, 2.5 cm	1	46.67
420833-1020	Screw Cap, 4.8 cm	1	52.98

Accessories

420809-0510	Bed Support, PTFE, 1.0 cm, 5 µm	1	24.54
420809-0520	Bed Support, PTFE, 2.5 cm, 5 µm	1	34.00
420809-0540	Bed Support, PTFE, 4.8 cm, 5 µm	1	65.74
420809-1010	Bed Support, PTFE, 1.0 cm, 10 µm	1	24.54
420809-1020	Bed Support, PTFE, 2.5 cm, 10 µm	1	33.75
420809-1040	Bed Support, PTFE, 4.8 cm, 10 µm	1	67.71
420809-2010	Bed Support, PTFE, 1.0 cm, 20 µm	1	25.03
420809-2020	Bed Support, PTFE, 2.5 cm, 20 µm	1	33.75
420809-2040	Bed Support, PTFE, 4.8 cm, 20 µm	1	67.06

* CAUTION

Pressurized glassware should always be used with adequate safety shielding.



CHROMAFLEX® Flow Adapters

Flow Adapters improve chromatogram resolution by delivering the sample and buffer directly to the top of the gel bed. This protects the gel bed from disruption during sample loading and eliminates any dead volume above the gel bed. Flow adapters are recommended when using buffer gradients, during reverse flow applications, and for high resolution gravity flow separations. Each flow adapter is supplied with a 20 µm porosity HDPE bed support, TFE / propylene o-ring, stainless steel adjusting rod, PTFE body and 5 feet (1.5 meters) of FEP tubing. Use of aggressive organic solvents requires the accessory PTFE bed supports and FFKM o-rings listed below.

For Standard Columns

Catalog Number	Fits Column ID (cm)	Tubing OD	Case Qty.	Case Price
420836-0000	1.0	1/16"	1	178.71
420836-1620	2.5	1/16"	1	301.37
420836-0020	2.5	1/8"	1	304.32
420836-0040	4.8	1/8"	1	425.77

For Jacketed Columns

Catalog Number	Fits Column ID (cm)	Tubing OD	Case Qty.	Case Price
420876-0000	1.0	1/16"	1	180.47
420876-1620	2.5	1/16"	1	301.37
420876-0020	2.5	1/8"	1	301.37
420876-0040	4.8	1/8"	1	425.77

Flow Adapter Replacement Parts

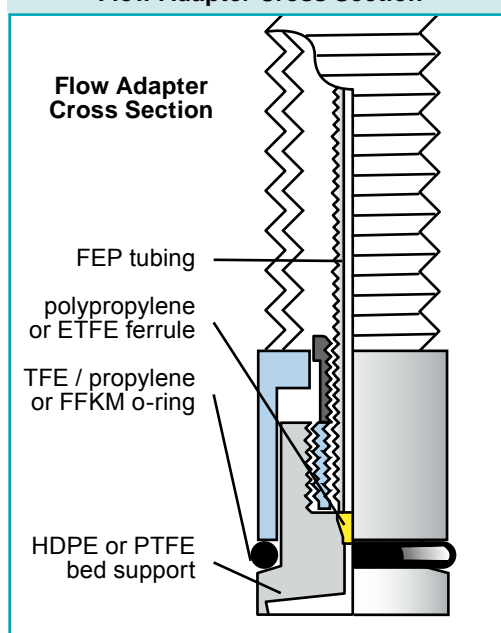
Catalog Number	Description	Fits Column ID	Case Qty.	Case Price
420811-2011	Bed Support, HDPE, 20 µm porosity	1.0 cm	10	52.59
420811-2020	Bed Support, HDPE, 20 µm porosity	2.5 cm	10	57.05
420811-2040	Bed Support, HDPE, 20 µm porosity	4.8 cm	10	63.08
758260-0010	O-ring, TFE/Propylene, Size 010	1.0 cm	1	call for price
758260-0116	O-ring, TFE/Propylene, Size 116	2.5 cm	1	call for price
758260-0222	O-ring, TFE/Propylene, Size 222	4.8 cm	1	call for price
420828-0116	Ferrule, Polypropylene, for 1/16" OD tubing	1.0 / 2.5	1	1.81
420828-0018	Ferrule, ETFE, for 1/8" OD tubing	2.5 / 4.8	1	1.81
420823-0116	Tubing, FEP, 1/16" OD x 10 feet	1.0 / 2.5	1	22.03
420823-0018	Tubing, FEP, 1/8" OD x 10 feet	2.5 / 4.8	1	34.12

Flow Adapter Accessory Parts

Catalog Number	Description	Fits Columns ID	Case Qty.	Case Price
420809-0510	Bed Support, PTFE, 5 µm porosity	1.0 cm	1	24.54
420809-0520	Bed Support, PTFE, 5 µm porosity	2.5 cm	1	34.00
420809-0540	Bed Support, PTFE, 5 µm porosity	4.8 cm	1	65.74
420809-1011	Bed Support, PTFE, 10 µm porosity	1.0 cm	1	24.54
420809-1020	Bed Support, PTFE, 10 µm porosity	2.5 cm	1	33.75
420809-1040	Bed Support, PTFE, 10 µm porosity	4.8 cm	1	67.71
420809-2011	Bed Support, PTFE, 20 µm porosity	1.0 cm	1	25.03
420809-2020	Bed Support, PTFE, 20 µm porosity	2.5 cm	1	33.75
420809-2040	Bed Support, PTFE, 20 µm porosity	4.8 cm	1	67.06
758240-0010	O-ring, FFKM, Size 010	1.0 cm	1	call for price
758240-0116	O-ring, FFKM, Size 116	2.5 cm	1	call for price
758240-0222	O-ring, FFKM, Size 222	4.8 cm	1	call for price



**CHROMAFLEX®
Flow Adapter Cross Section**



CHROMAFLEX® Packing Reservoirs for Standard Columns

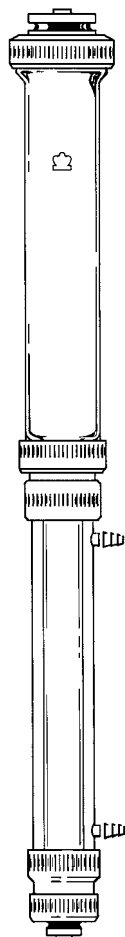
The CHROMAFLEX Packing Reservoirs are ideal for packing gel slurries into columns. Each packing reservoir is designed for easy mounting on CHROMAFLEX Standard Columns. The capacities are matched to take the amount of gel slurry required to pack the longest column. The packing reservoirs may also be used as a buffer reservoir for gravity flow chromatography.

For Standard Columns Only

Catalog Number	Fits Column ID (cm)	Nominal Volume	Case Qty.	Case Price
420837-0000	1.0	150 mL	1	177.84
420837-0020	2.5	500 mL	1	353.92
420837-0040	4.8	2000 mL	1	575.77



420837




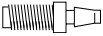



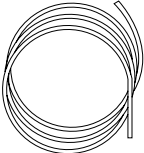
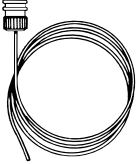
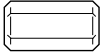

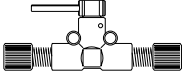


Jacketed Column with Packing Reservoir Attached

CHROMAFLEX Columns - Column bed height and approximate volume data.							
Without Adapters			With One Adapter		With Two Adapters		Maximum Pressure (psi) (must use with safety jacket)
ID (cm)	Length (cm)	Volume (mL)	Bed Height (cm)	Volume (mL)	Bed Height (cm)	Volume (mL)	
1	15	12	1-13	1-10	0-11	0-8	
1	30	24	16-28	12-22	2-26	2-20	
1	60	47	46-58	36-46	32-56	25-44	100
1	100	78	86-98	67-77	72-96	56-75	
1	120	94	106-118	83-93	92-116	72-91	
2.5	15	74	1-13	5-64	0-11	0-54	
2.5	30	147	16-28	78-137	2-26	10-128	
2.5	60	294	46-58	226-285	32-56	157-275	75
2.5	100	490	86-98	421-480	72-96	352-470	
2.5	120	589	106-118	520-579	92-116	451-569	
4.8	15	271	1-13	18-235	0-11	0-199	
4.8	30	543	16-28	289-506	2-26	36-470	
4.8	60	1085	46-58	832-1049	32-56	579-1013	50
4.8	100	1808	86-98	1555-1772	72-96	1302-1736	
4.8	120	2170	106-118	1917-2134	92-116	1664-2098	
10	15	1000					not rated (no safety jacket avail.)
10	30	2000					
10	60	5000					
10	100	7670					
10	120	9000					

CHROMAFLEX® FITTINGS

The following tubing nuts and ferrules are required to make the initial tubing connections to the end fittings of Chromaflex Columns.

Catalog Number		Description	Material	Case Qty.	Case Price
420826-0116		Tubing Nut, for 1/16" OD tubing	PEEK	1	24.68
420826-0018		Tubing Nut, for 1/8" OD tubing	PEEK	1	24.68
420827-0116		Ferrule, for 1/16" OD tubing	PEEK	1	9.76
420828-0116		Ferrule, for 1/16" OD tubing	Polypropylene	1	1.81
420827-0018		Ferrule, for 1/8" OD tubing	PEEK	1	9.81
420828-0018		Ferrule, for 1/8" OD tubing	Polypropylene	1	1.81
953918-2306		Adapter, M1/4-28 Thread to 1/16" Barb	ETFE	1	7.61
953918-2313		Adapter, M1/4-28 Thread to 1/8" Barb	ETFE	1	7.61
953918-2319		Adapter, M1/4-28 Thread to 3/16" Barb	ETFE	1	7.61
420821-0116		Flangeless Nut, 1/4-28 Thread, for 1/16" tubing	ETFE	1	4.14
420821-0018		Flangeless Nut, 1/4-28 Thread, for 1/8" and 1.8mm OD tubing	ETFE	1	4.14
420821-6116		Flangeless Nut, M6 Thread, for 1/16" tubing	Acetal	1	2.99
420821-0618		Flangeless Nut, M6 Thread, for 1/8" and 1.8mm OD tubing	Acetal	1	2.99
420822-0116		Flangeless Ferrule, for 1/16" OD tubing	ETFE	1	3.15
420822-2007		Flangeless Ferrule, for 1.8 mm OD tubing	ETFE	1	3.15
420822-0018		Flangeless Ferrule, for 1/8" OD tubing	ETFE	1	3.15
420823-0014		Tubing, 1/4" OD x 0.030" ID x 10 feet	FEP	1	81.67
420823-0116		Tubing, 1/16" OD x 0.038" ID x 10 feet	FEP	1	22.03
420823-0018		Tubing, 1/8" OD x 0.062" ID x 10 feet	FEP	1	34.12
H90669-0005		Tubing, 1/16" OD x 5 feet, with integral F-Luer fitting	Tubing - PTFE Luer - CTFE	5	165.63
H88800-0000		Union, F1/4-28 to F1/4-28	CTFE	1	11.08
420818-0000		Union, F1/4-28 to F1/4-28	ETFE	1	8.45
420818-0600		Union, F1/4-28 to F-M6	ETFE	1	9.63
420818-0606		Union, F-M6 to F-M6	ETFE	1	14.40
953924-1300		Union, M1/4-28 to M1/4-28	CTFE	1	24.52
420817-2306		Valve, 1-way, 1/4-28 Threads, with 1/16" Flangeless Fittings	Valve - ETFE Fittings - ETFE	1	65.77
420817-2313		Valve, 1-way, 1/4-28 Threads, with 1/8" Flangeless Fittings	Valve - ETFE Fittings - ETFE	1	65.77
420817-3306		Valve, 1-way, 1/4-28 Threads, with 1/16" Flangeless Fittings	Valve - PEEK Fittings -PEEK/ ETFE	1	112.61
420817-3313		Valve, 1-way, 1/4-28 Threads, with 1/8" Flangeless Fittings	Valve - PEEK Fittings -PEEK/ ETFE	1	112.61

FLEX-COLUMNS are economical, easy-to-use chromatography columns that are ideal for use with gel filtration, ion exchange, affinity and adsorption media. The columns are constructed of polypropylene reservoirs and column outlets permanently connected to a borosilicate glass barrel. The 20 µm porosity polyethylene bed supports are fixed in the column outlets. Luer lock inlets and outlets on the columns, along with a wide variety of adapters, valves and fittings provide simple and versatile tubing connections.

Standard Columns

Standard FLEX-COLUMNS are available in 30 different sizes with standard inside diameters of 0.7, 1.0, 1.5 and 2.5 cm and lengths ranging from 4 to 120 cm. All columns are fitted with translucent polypropylene reservoir tops, and bed supports that are permanently mounted in the polypropylene column outlet. Short columns are typically used for ion exchange chromatography, sample desalting and semidisposable applications, while the long columns are ideally suited for gel filtration and adsorption chromatography.

Flow Adapters

FLEX-COLUMN Flow Adapters allow easy adjustment of the column bed volume. They are ideal for concentration and pH gradients, reverse flow separations, and gravity flow separations that require a high level of resolution and reproducibility. Flow adapters are available for 1.0, 1.5 and 2.5 cm ID columns.

Luer Lock Fittings

The male luer lock fittings on all FLEX-COLUMNS along with our complete line of fittings, valves and adapters allow easy connection to any low pressure chromatography system.

Custom Length Columns

Certain applications may require a column length not found in our standard product offering. Please contact Customer Service for pricing and delivery details for custom length FLEX-COLUMNS. Call 888-546-2531.

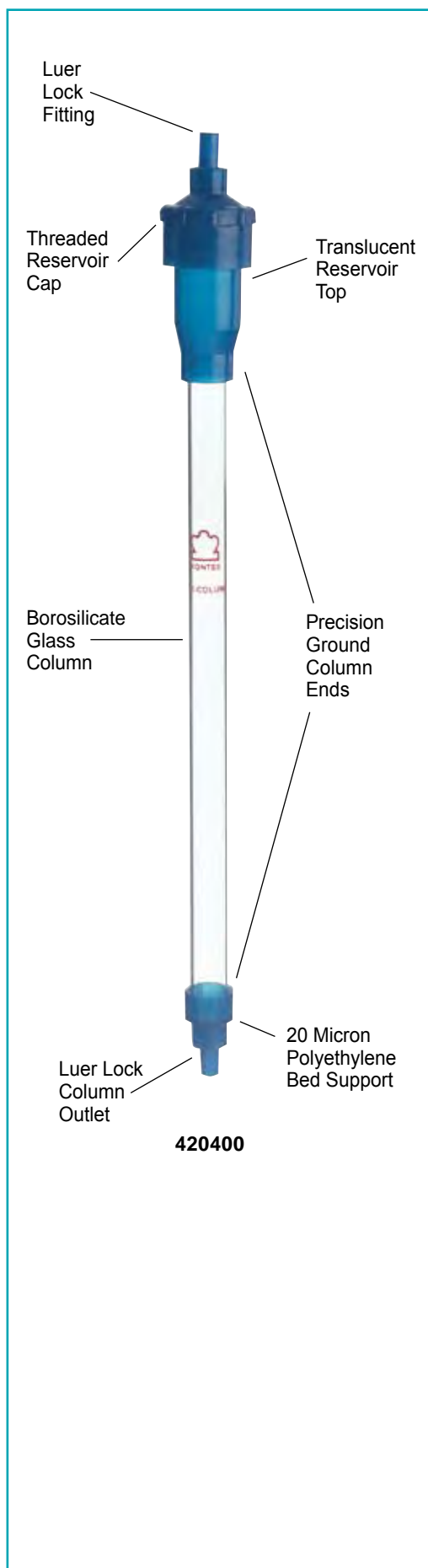
Specifications

Materials:	Column Barrels: Type I, Class A Borosilicate Glass
Cap, Reservoir & Column Outlet:	Polypropylene
	Bed Support: High Density Polyethylene (HDPE)
	Bed Support Porosity: 20 micron nominal
	Maximum Pressure: 1.0 bar (14.7 psi, 1.0 atm, 0.1 MPa)
	Temperature Range: 0 to 50 °C
	Tubing Connections: Male Luer Locks
	Recommended Sterilization Method: 2N NaOH or 100% Ethanol (Autoclaving is not recommended.)

Note: Polypropylene end fittings are NOT replaceable on FLEX-COLUMNS.

* CAUTION

Pressurized glassware should always be used with adequate safety shielding.



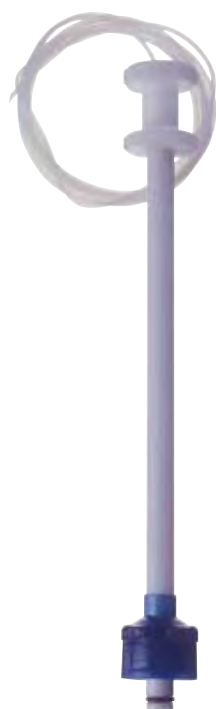
FLEX-COLUMN® Economy Columns

Catalog Number	ID (cm)	Length (cm)	Cross Sectional Area (cm ²)	Volume (mL)	Case Qty.	Case Price	Catalog Number	ID (cm)	Length (cm)	Cross Sectional Area (cm ²)	Volume (mL)	Case Qty.	Case Price
420400-0704	0.7	4	0.39	2	10	144.82	420400-1505	1.5	5	1.77	9	5	102.87
420401-0704	0.7	4	0.39	2	1	19.83	420401-1505	1.5	5	1.77	9	1	29.73
420400-0705	0.7	5	0.39	2	10	144.82	420400-1510	1.5	10	1.77	18	5	113.78
420401-0705	0.7	5	0.39	2	1	19.83	420401-1510	1.5	10	1.77	18	1	34.59
420400-0710	0.7	10	0.39	4	10	144.82	420400-1515	1.5	15	1.77	27	5	113.78
420401-0710	0.7	10	0.39	4	1	24.67	420401-1515	1.5	15	1.77	27	1	34.59
420400-0715	0.7	15	0.39	6	10	165.00	420400-1520	1.5	20	1.77	35	5	124.27
420401-0715	0.7	15	0.39	6	1	24.67	420401-1520	1.5	20	1.77	35	1	40.32
420400-0720	0.7	20	0.39	8	10	165.00	420400-1530	1.5	30	1.77	53	5	124.27
420401-0720	0.7	20	0.39	8	1	24.67	420401-1530	1.5	30	1.77	53	1	39.30
420400-0730	0.7	30	0.39	12	10	186.40	420400-1550	1.5	50	1.77	89	5	165.00
420401-0730	0.7	30	0.39	12	1	29.73	420401-1550	1.5	50	1.77	89	1	49.39
420400-0750	0.7	50	0.39	20	10	226.68	420400-1575	1.5	75	1.77	124	3	186.40
420401-0750	0.7	50	0.39	20	1	29.73	420401-1575	1.5	75	1.77	124	1	88.59
420400-1005	1.0	5	0.79	4	10	144.82	420400-1511	1.5	100	1.77	177	3	216.63
420401-1005	1.0	5	0.79	4	1	19.83	420401-1511	1.5	100	1.77	177	1	98.23
420400-1010	1.0	10	0.79	8	10	144.82	420400-1512	1.5	120	1.77	230	3	248.50
420401-1010	1.0	10	0.79	8	1	24.67	420401-1512	1.5	120	1.77	230	1	108.30
420400-1015	1.0	15	0.79	12	10	154.91	420400-1517	1.5	170	1.77	301	2	248.50
420401-1015	1.0	15	0.79	12	1	24.67	420401-1517	1.5	170	1.77	301	1	147.34
420400-1020	1.0	20	0.79	16	10	165.00	420400-2505	2.5	5	4.91	25	5	126.77
420401-1020	1.0	20	0.79	16	1	24.67	420401-2505	2.5	5	4.91	25	1	39.14
420400-1030	1.0	30	0.79	24	10	165.00	420400-2510	2.5	10	4.91	49	5	144.82
420401-1030	1.0	30	0.79	24	1	24.67	420401-2510	2.5	10	4.91	49	1	39.30
420400-1050	1.0	50	0.79	40	10	186.40	420400-2515	2.5	15	4.91	74	5	146.94
420401-1050	1.0	50	0.79	40	1	29.73	420401-2515	2.5	15	4.91	74	1	43.81
420401-1011	1.0	100	0.79	79	1	68.86	420400-2520	2.5	20	4.91	98	5	154.49
420400-1012	1.0	120	0.79	95	3	248.50	420401-2520	2.5	20	4.91	98	1	44.33
420401-1012	1.0	120	0.79	95	1	78.59	420400-2530	2.5	30	4.91	147	5	156.59
							420401-2530	2.5	30	4.91	147	1	56.57
							420400-2550	2.5	50	4.91	246	3	154.49
							420401-2550	2.5	50	4.91	246	1	68.86
							420400-2575	2.5	75	4.91	344	2	124.27
							420401-2575	2.5	75	4.91	344	1	88.59
							420400-2511	2.5	100	4.91	491	2	186.40
							420401-2511	2.5	100	4.91	491	1	117.54
							420401-2512	2.5	120	4.91	638	1	137.28
							420400-2512	2.5	120	4.91	638	2	206.52

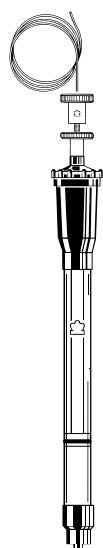
Replacement End Caps

Catalog Number	Case Qty.	Case Price
420169-0000	100	18.80

Plastic Resin Codes		Temp °C (Max)	Temp °C (Min)	Autoclavable	Microwavable	Dry Heat	Gas	Gamma	Disinfectants
Abbreviation	Chemical Designation								
ABS	Acryl-Butadienestyrene Acetal	100	40	NO	YES	NO	YES	YES	YES
LDPE	Low Density Polyethylene	100	80	NO	YES	NO	YES	YES	YES
HDPE	High Density Polyethylene	120	100	NO	YES	NO	YES	YES	YES
NYL	Polyamide	90	0	NO	YES	NO	YES	YES	YES
PCTFE	Polychlorotrifluoroethylene	80	0	NO	YES	NO	YES	YES	YES
PC	Polycarbonate	135	0	YES	YES	NO	YES	YES	YES
PP	Polypropylene	135	0	YES	YES	NO	YES	NO	YES
PTFE	Polytetrafluoroethylene	250	267	YES	YES	YES	YES	YES	YES
PVC	Polyvinyl Chloride	70	30	NO	YES	NO	YES	NO	YES
PVDF	Kynar (polyvinylidene fluoride)	110	62	YES	YES	NO	YES	NO	YES
E-CTFE	Ethylene Chlorotrifluoroethylene	150	105	YES	YES	YES	YES	NO	YES
ETFE	EthyleneTetrafluoroethylene	150	105	YES	YES	YES	YES	NO	YES
PFA	Perfluoroalkoxy	260	270	YES	YES	YES	YES	NO	YES
San	Styrene	95	20	NO	YES	NO	YES	YES	YES
PMP	Polymethylpentene (TPX)	175	70	YES	YES	NO	YES	YES	YES
PMMA	Polymethylmethacrylate (PMMP)	50	0	NO	YES	NO	YES	YES	YES
PS	Polystyrene	90	20	NO	YES	NO	YES	YES	YES
PEEK	Polyetheretherketone	125	0	YES	YES	NO	YES	YES	YES
PVC	Polyvinylchloride	80	20	YES	YES	NO	YES	NO	YES
TFE	Tetrafluoroethylene	260	-267	YES	YES	YES	YES	YES	YES



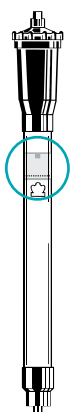
420415



Column with Flow Adapter



420404



Column with Diffusion Disc



420405

FLEX-COLUMN® Flow Adapters

Flow adapters can significantly improve FLEX-COLUMN performance by protecting the gel bed from disruption during sample loading and by eliminating any dead volume above the gel bed. Flow adapters improve chromatogram resolution by delivering the sample and buffer directly to the top of the gel bed. Flow adapters are also recommended when using buffer gradients or when the columns are connected to a low pressure pump system. Flow adapters consist of 1/16" OD FEP tubing, a polyacetal body, an FKM o-ring seal and a 20 µm porosity HDPE bed support. One replacement bed support is supplied with each flow adapter.

Catalog Number	Description	Fits Column ID (cm)	Functional Length (cm)	Case Qty.	Case Price
420415-1000	Flow Adapter	1.0	14	1	150.23
420415-1500	Flow Adapter	1.5	14	1	148.06
420415-2500	Flow Adapter	2.5	14	1	148.06

Replacement Parts

420415-1001	Bed Support, 1.0 cm			10	39.49
420415-1501	Bed Support, 1.5 cm			10	40.07
420415-2501	Bed Support, 2.5 cm			10	50.36
758252-0010	O-ring, FKM, Size 010			10	call for price
758252-0110	O-ring, FKM, Size 110			10	call for price
758252-0116	O-ring, FKM, Size 116			10	call for price
420828-0116	Ferrule, Polypropylene, 1/16" OD			1	1.81
420823-0116	Tubing, FEP, 1/16" OD x 0.038" ID			10 feet	22.03

FLEX-COLUMN® Sample Diffusion Discs

Sample diffusion discs protect the gel bed from being disrupted during sample application whenever a flow adapter is not used. A transparent acrylic ring is sealed to a 20 µm porosity HDPE disc which protects the top of the gel bed when the sample is manually applied. A cross bar on the top of the acrylic ring permits easy removal of the sample diffusion disc from the column.







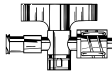

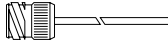



Catalog Number	Description	Case Qty.	Case Price
420404-1000	Sample Diffusion Disc, 1.0 cm	1	16.85
420404-1500	Sample Diffusion Disc, 1.5 cm	1	18.66
420404-2500	Sample Diffusion Disc, 2.5 cm	1	21.23

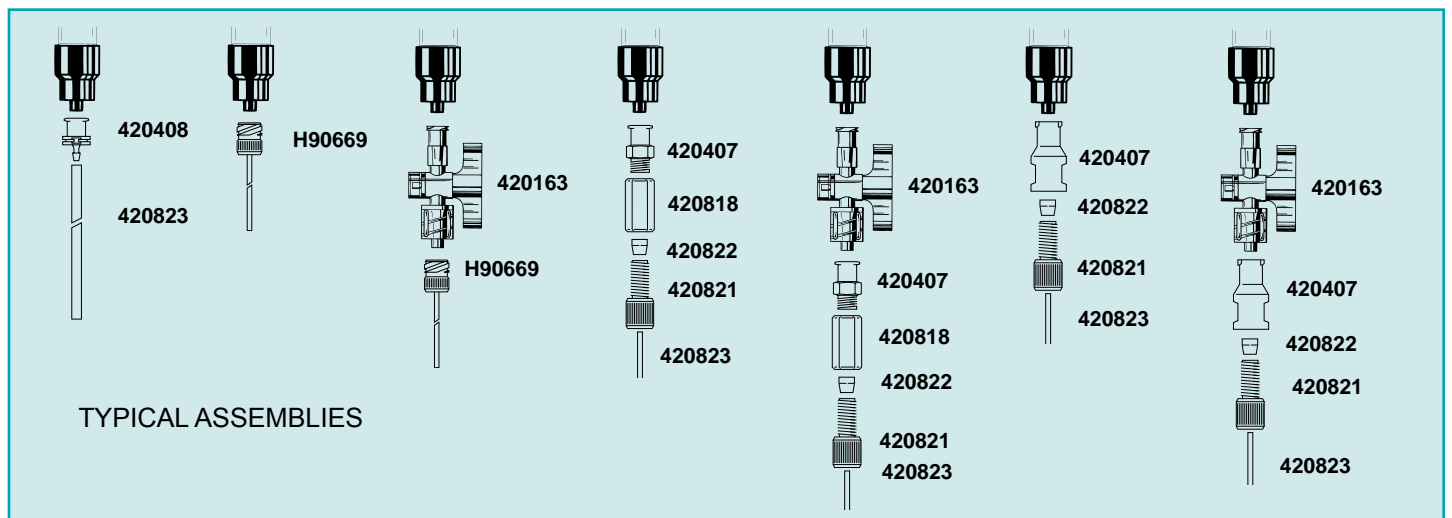
FLEX-COLUMN® Polypropylene Packing Reservoirs

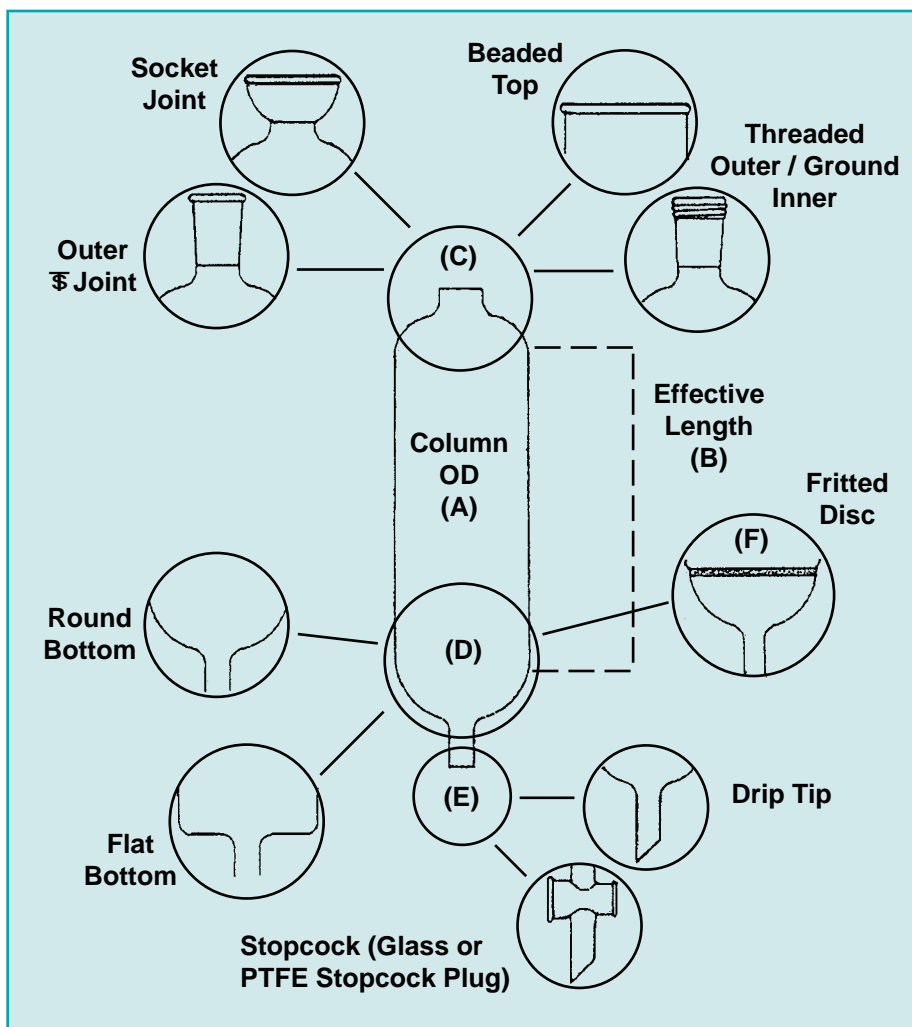
The funnels are manufactured from polypropylene and are available in two capacities: 100 mL for the 0.7, 1.0 and 1.5 cm ID columns and 700 mL for the 2.5 cm columns. The funnels are used for initial column packing and as a small buffer reservoir.

Catalog Number	Capacity (mL)	Case Qty.	Case Price
420405-0100	100	12	92.87
420405-0700	700	5	92.87

FLEX-COLUMN® Fittings

Catalog Number	Description	Material	Case Qty.	Case Price	
420408-0000	 Barb for 1/16" I.D. tubing to female luer	polypropylene	10	25.63	
420412-0000	 Barb for 1/16" I.D. tubing to male luer	polypropylene	10	24.99	
420411-0000	 Female luer to female luer	polypropylene	10	29.71	
420407-0000	 Female luer to 1/4-28 thread	polypropylene	10	23.66	
420407-2003	 Female luer to female 1/4-28 thread	ETFE	1	15.70	
420407-2113	 Male luer to male 1/4-28 thread	ETFE	1	7.44	
H88800-0000	Union, 1/4-28 to 1/4-28	CTFE	1	11.08	
420818-0000	Union, 1/4-28 to 1/4-28	ETFE	1	8.45	
420818-0600	Union, 1/4-28 to M-6	ETFE	1	9.63	
420818-0606	Union, M-6 metric to M-6	ETFE	1	14.40	
420818-3305	Union, 1/4-28 to 5/16-24	PEEK	1	28.15	
420163-0001	 1-way stopcock female luer to male luer	body-nylon valve plug-polyethylene	10	44.88	
420163-4503	 3-way stopcock Two female luer to male luer	body-nylon valve plug-polyethylene	10	54.51	
H90669-0005	 5' PTFE tubing w/ integral luer lock	PTFE / CTFE	5	165.63	
420823-0116		Tubing, 1/16" O.D. x 0.038" I.D. x 10'	FEP	1	22.03
420823-0018		Tubing, 1/8" O.D. x 0.062" I.D. x 10'	FEP	1	34.12
420823-0014		Tubing, 1/4" O.D. x 0.156" I.D. x 10'	FEP	1	81.67
420821-0116		1/4-28 tubing nut for 1/16" O.D. tubing	ETFE	1	4.14
420821-0018		1/4-28 tubing nut for 1/8" O.D. tubing	ETFE	1	4.14
420822-0116		Ferrule for 1/16" O.D. tubing	ETFE	1	3.15
420822-0018		Ferrule for 1/8" O.D. tubing	ETFE	1	3.15
420822-2007		Ferrule for 1.8 mm O.D. tubing	ETFE	1	3.15





Custom Column Specifications

The Custom Glass Shop has the ability to custom fabricate chromatography columns to your specifications. Columns are available with any standard taper, spherical or threaded joints. Consider the following issues when designing your columns.

A – Column OD: _____

Special columns will be constructed using medium wall tubing unless otherwise specified.

B – Column Effective Length: _____

Effective length is the length of the straight sides of the column prior to rounding off the tubing for sealing the top joint or the lower stopcock. On a fritted column, the effective length is measured to the fritted disc.

C – Top Joint Style and Size: _____

D– Lower Column Configuration: _____

Please specify round or flat bottom.

E – Stopcock Type and Size: _____

Please specify stopcock bore. PTFE, Glass or plain drip tip.

F – Fritted Disc Required: _____

Special columns will be constructed using a coarse porosity (40-60 micron) fritted disc unless otherwise specified.

G – Plastic Coated Column: _____

H – Volume: _____

I – Quantity: _____

We can take it from here!

- Technical Support
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- Polishing
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420530

Custom sizes and plastic safety coating are available upon request. See page 13 for help specifying custom column options.



420570

Columns with PTFE Stopcock Plugs

A general purpose gravity column for analytical separations. A plug of glass wool can be used to support the column packing. PTFE stopcock plugs, 821001-0002 and 821001-0004, control the flow rate. **Custom sizes and plastic safety coating are available upon request.**

Catalog Number	Column I.D. x Length (mm)	Volume (mL)	Stopcock Bore (mm)	Case Qty.	Case Price
420530-0211	11 x 150	10	2	1	107.19
420530-0212	11 x 200	15	2	1	107.19
420530-0213	11 x 250	20	2	1	94.79
420530-0214	11 x 300	25	2	1	98.92
420530-0125	13 x 250	28	2	1	93.66
420530-0130	13 x 300	34	2	1	101.81
420530-0150	13 x 500	66	2	1	128.56
420530-0221	15 x 200	30	2	1	104.72
420530-0222	15 x 250	40	2	1	107.19
420530-0225	15 x 500	80	2	1	122.12
420530-0220	19 x 200	51	2	1	85.85
420530-0226	19 x 250	56	2	1	93.66
420530-0232	19 x 300	80	2	1	115.47
420530-0233	19 x 400	113	2	1	122.94
420530-0234	19 x 500	140	2	1	128.72
420530-0241	22 x 300	110	2	1	122.94
420530-0242	22 x 350	130	2	1	126.23
420530-0244	22 x 500	190	2	1	136.58
420530-0320	25 x 200	90	2	1	108.14
420530-0325	25 x 250	100	2	1	122.26
420530-0330	25 x 300	136	2	1	136.37
420530-0350	25 x 500	245	2	1	163.50
420530-0251	30 x 350	220	2	1	134.10
420530-0252	30 x 400	250	2	1	139.49
420530-0253	30 x 500	300	2	1	149.01
420530-0255	30 x 700	440	2	1	182.09
420530-0265	34 x 700	630	2	1	206.93
420530-0420	38 x 200	227	2	1	108.14
420530-0425	38 x 250	280	2	1	122.62
420530-0430	38 x 300	340	2	1	134.10
420530-0450	38 x 500	567	2	1	157.26
420530-0273	41 x 500	650	2	1	168.86
420530-0275	41 x 700	900	2	1	241.71
420530-0414	49 x 600	1100	2	1	246.67
420530-0415	49 x 700	1300	2	1	251.65
420530-0520	50 x 200	360	2	1	115.93
420530-0525	50 x 250	470	2	1	133.40
420530-0530	50 x 300	589	2	1	149.01
420530-0550	50 x 500	981	2	1	182.09
420530-0560	50 x 600	1180	2	1	217.39
420530-0620	64 x 200	643	4	1	130.42
420530-0625	64 x 250	804	4	1	144.55
420530-0630	64 x 300	965	4	1	178.50
420530-0650	64 x 500	1608	4	1	206.93
420530-0660	64 x 600	1929	4	1	253.26
420530-0720	75 x 200	883	4	1	152.36
420530-0725	75 x 250	1004	4	1	174.64
420530-0730	75 x 300	1290	4	1	196.19
420530-0750	75 x 500	2149	4	1	261.57
420530-0760	75 x 600	2579	4	1	304.60

Replacement Parts

821001-0002	Stopcock Plug Only, 2mm	1	14.02
821001-0004	Stopcock Plug Only, 4mm	1	16.10

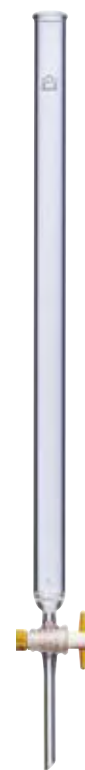
Packing Reservoirs with \mathcal{F} Joints

These heavy duty reservoirs are designed for use with 420510 and 420550 series chromatography columns with and without fritted glass supports or in combination with 420575 series flow control adapters. Reservoirs are available in a variety of sizes and joint configurations.

Catalog Number	Upper \mathcal{F} Joint	Lower \mathcal{F} Joint	Capacity (mL)	Case Qty.	Case Price
420570-0124	100	24/40	24/40	1	58.79
420570-0224	250	24/40	24/40	1	68.86
420570-0524	500	24/40	24/40	1	73.92
420570-1024	1000	24/40	24/40	1	78.96
420570-2024	2000	24/40	24/40	1	129.33
420570-3045	3000	45/50	45/50	1	151.19

Columns with Fritted Discs and PTFE Stopcock Plugs

Catalog Number	Column I.D. x Length (mm)	Volume (mL)	Stopcock Bore (mm)	Case Qty.	Case Price
420540-0213	11 x 300	20	2	1	124.15
420540-0120	13 x 200	23	2	1	101.81
420540-0125	13 x 250	28	2	1	108.14
420540-0130	13 x 300	34	2	1	114.08
420540-0150	13 x 500	66	2	1	134.90
420540-0220	19 x 200	51	2	1	101.81
420540-0225	19 x 250	56	2	1	108.14
420540-0230	19 x 300	76	2	1	143.82
420540-0224	19 x 400	110	2	1	130.78
420540-0250	19 x 500	142	2	1	134.90
420540-0233	22 x 300	110	2	1	136.58
420540-0234	22 x 400	150	2	1	137.84
420540-0320	25 x 200	90	2	1	130.42
420540-0325	25 x 250	100	2	1	141.22
420540-0243	25 x 300	140	2	1	142.81
420540-0245	25 x 500	240	2	1	190.15
420540-0420	38 x 200	227	2	1	130.42
420540-0425	38 x 250	280	2	1	141.22
420540-0430	38 x 300	340	2	1	150.66
420540-0450	38 x 500	567	2	1	182.09
420540-0256	41 x 600	775	4	1	210.21
420540-2610	49 x 1000	1875	4	1	350.95
420540-0520	50 x 200	360	2	1	169.45
420540-0525	50 x 250	470	2	1	184.33
420540-0530	50 x 300	589	2	1	198.66
420540-0550	50 x 500	981	2	1	205.27
420540-0560	50 x 600	1180	2	1	266.81
420540-0620	64 x 200	643	4	1	178.00
420540-0625	64 x 250	804	4	1	191.75
420540-0630	64 x 300	965	4	1	200.32
420540-0650	64 x 500	1608	4	1	243.36
420540-0660	64 x 600	1929	4	1	281.44
420540-0720	75 x 200	883	4	1	230.01
420540-0725	75 x 250	1004	4	1	236.34
420540-0730	75 x 300	1290	4	1	260.12
420540-0750	75 x 500	2149	4	1	311.24
420540-0760	75 x 600	2579	4	1	355.92



420540

Gravity column manufactured from medium wall tubing with 821000 PTFE stopcock similar in design to the 420530 series. These columns have a coarse porosity glass frit (40-60 micron pore size) at the lower end to act as a support for column packing material. PTFE stopcock plugs, 821001-0002 and 821001-0004, control the flow rate.

Custom sizes and plastic safety coating are available upon request. See page 13 for help specifying custom column options.

Columns with PTFE Stopcock Plugs and F Joints

Gravity chromatography columns feature PTFE stopcocks and standard taper joints and are manufactured from medium wall tubing. Glass wool (not supplied) may be used as a support for column packing material. These columns may be used alone or in combination with 420570 series reservoir and 420575 series flow control adapters.

PTFE stopcock plugs, 821001-0002 and 821001-0004, control the flow rate.

Catalog Number	Column I.D. x Length (mm)	Volume (mL)	Upper F Joint	Stopcock Bore (mm)	Case Qty.	Case Price
420510-0120	13 x 200	23	24/40	2	1	105.94
420510-0125	13 x 250	28	24/40	2	1	109.25
420510-0130	13 x 300	34	24/40	2	1	119.21
420510-0150	13 x 500	66	24/40	2	1	146.03
420510-0220	19 x 200	51	24/40	2	1	105.94
420510-0225	19 x 250	56	24/40	2	1	109.25
420510-0230	19 x 300	76	24/40	2	1	119.21
420510-0250	19 x 500	142	24/40	2	1	146.03
420510-0320	25 x 200	90	24/40	2	1	132.44
420510-0325	25 x 250	100	24/40	2	1	142.37
420510-0330	25 x 300	136	24/40	2	1	153.96
420510-0350	25 x 500	245	24/40	2	1	188.78
420510-0420	38 x 200	227	24/40	2	1	134.90
420510-0425	38 x 250	280	24/40	2	1	142.37
420510-0430	38 x 300	340	24/40	2	1	152.31
420510-0450	38 x 500	560	24/40	2	1	185.41
420510-0520	50 x 200	360	24/40	2	1	173.16
420510-0525	50 x 250	470	24/40	2	1	188.78
420510-0530	50 x 300	590	24/40	2	1	198.66
420510-0550	50 x 500	980	24/40	2	1	221.84
420510-0560	50 x 600	1180	24/40	2	1	258.26
420510-0620	64 x 200	643	45/50	4	1	183.93
420510-0625	64 x 250	804	45/50	4	1	198.44
420510-0630	64 x 300	965	45/50	4	1	201.96
420510-0650	64 x 500	1600	45/50	4	1	245.00
420510-0660	64 x 600	1920	45/50	4	1	284.73
420510-0720	75 x 200	883	45/50	4	1	234.46
420510-0725	75 x 250	1004	45/50	4	1	253.82
420510-0730	75 x 300	1290	45/50	4	1	264.89
420510-0750	75 x 500	2140	45/50	4	1	317.83
420510-0760	75 x 600	2580	45/50	4	1	372.47



420510



420550

Custom sizes and plastic safety coating are available upon request. See page 13 for help specifying custom column options.



420575

Columns with Fritted Discs, PTFE Stopcock Plugs and F Joints

Gravity column manufactured from medium wall tubing with PTFE stopcock similar in design to the 420510 series. These columns have a coarse porosity glass frit (40-60 micron pore size) at the lower end to act as a support for column packing material. These columns may be used alone or in combination with 420570 series reservoir and 420575 series flow control adapters. **Custom sizes and plastic safety coating are available upon request.**

Catalog Number	Column I.D. x Length (mm)	Volume (mL)	Upper F Joint	Stopcock Bore (mm)	Case Qty.	Case Price
420550-0213	11 x 300	30	24/40	2	1	175.47
420550-0120	13 x 200	23	24/40	2	1	135.66
420550-0125	13 x 250	28	24/40	2	1	125.79
420550-0130	13 x 300	34	24/40	2	1	135.77
420550-0150	13 x 500	66	24/40	2	1	163.50
420550-0220	19 x 200	51	24/40	2	1	119.21
420550-0225	19 x 250	56	24/40	2	1	125.79
420550-0230	19 x 300	76	24/40	2	1	137.42
420550-0224	19 x 400	125	24/40	2	1	183.77
420550-0234	19 x 450	150	24/40	2	1	190.36
420550-0250	19 x 500	142	24/40	2	1	163.50
420550-0233	22 x 300	140	24/40	2	1	190.36
420550-0243	22 x 350	175	24/40	2	1	197.00
420550-0245	22 x 550	250	24/40	2	1	200.32
420550-0320	25 x 200	90	24/40	2	1	149.01
420550-0325	25 x 250	113	24/40	2	1	158.94
420550-0330	25 x 300	136	24/40	2	1	174.64
420550-0350	25 x 500	245	24/40	2	1	206.24
420550-0420	38 x 200	227	24/40	2	1	160.16
420550-0425	38 x 250	280	24/40	2	1	168.86
420550-0430	38 x 300	340	24/40	2	1	175.47
420550-0450	38 x 500	560	24/40	2	1	223.48
420550-0256	41 x 600	790	24/40	4	1	273.16
420550-0520	50 x 200	360	24/40	2	1	199.92
420550-0525	50 x 250	470	24/40	2	1	214.04
420550-0530	50 x 300	580	24/40	2	1	223.48
420550-0550	50 x 500	980	24/40	2	1	245.00
420550-0560	50 x 600	1175	24/40	2	1	279.15
420550-2610	50 x 1000	1875	24/40	4	1	435.38
420550-0620	64 x 200	643	45/50	4	1	219.24
420550-0625	64 x 250	804	45/50	4	1	231.50
420550-0630	64 x 300	960	45/50	4	1	238.39
420550-0650	64 x 500	1600	45/50	4	1	283.09
420550-0660	64 x 600	1920	45/50	4	1	322.80
420550-0720	75 x 200	883	45/50	4	1	268.31
420550-0725	75 x 250	1004	45/50	4	1	286.88
420550-0730	75 x 300	1280	45/50	4	1	297.98
420550-0750	75 x 500	2100	45/50	4	1	350.95
420550-0760	75 x 600	2550	45/50	4	1	405.59

Replacement Parts

821001-0002	Stopcock Plug only, 2 mm	1	14.02
821001-0004	Stopcock Plug only, 4 mm	1	16.10

Flow Control Adapters with F Joints

The flow control adapter features Kontes HI-VAC® PTFE plug designed with a precision external thread for fine control. The accurately controlled valve seat and the extended tip on the PTFE plug allow semi-needle valve control for liquids. The FKM o-ring is shielded from direct exposure to liquids within the system by PTFE ring seals.

Catalog Number	F Joint	Valve Plug Bore Range (mm)	Case Qty.	Case Price
420575-2440	24/40	0-4	1	107.51
420575-4550	45/50	0-4	1	140.38

Replacement Plug

826411-0004	Valve Plug only, 4 mm	1	11.31
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Columns with Reservoirs, PTFE Stopcock Plugs and $\frac{3}{4}$ 24/40 Joints

Gravity chromatography column manufactured from medium wall tubing with PTFE stopcock and in-line reservoir for containing liquid buffer. Glass wool (not supplied) may be used as a support for the packing material. These columns may be used alone or in combination with 420575-2440 flow control adapter. **Custom sizes and plastic safety coating are available upon request.**

Catalog Number	Volume (mL)	Column ID x Length (mm)	Reservoir Cap (mL)	Stopcock Bore (mm)	Case Qty.	Case Price
420610-0120	23	13 x 200	250	2	1	119.21
420610-0125	28	13 x 250	250	2	1	125.79
420610-0130	34	13 x 300	250	2	1	132.44
420610-0320	90	25 x 200	250	2	1	150.66
420610-0325	100	25 x 250	250	2	1	158.94
420610-0330	136	25 x 500	250	2	1	168.86
420610-0350	245	25 x 300	250	2	1	211.82
420610-0420	227	38 x 200	500	2	1	157.19
420610-0430	340	38 x 300	500	2	1	172.17
420610-0450	560	38 x 500	500	2	1	201.96
420610-0520	360	50 x 300	500	2	1	193.59
420610-0530	590	50 x 300	1000	2	1	225.14
420610-0550	980	50 x 500	1000	2	1	248.33
420610-0560	1180	50 x 600	1000	2	1	293.03
420610-0620	643	64 x 200	1000	4	1	211.82
420610-0630	965	64 x 300	1000	4	1	235.09
420610-0650	1600	64 x 500	2000	4	1	274.78
420610-0660	1920	64 x 600	2000	4	1	304.60
420610-0720	883	75 x 200	2000	4	1	278.68
420610-0730	1290	75 x 300	2000	4	1	269.83
420610-0750	2140	75 x 500	2000	4	1	364.23
420610-0760	2580	75 x 600	2000	4	1	394.00

Replacement Parts

821001-0002	Stopcock Plug only, 2 mm	1	14.02
821001-0004	Stopcock Plug only, 4 mm	1	16.10

Columns with Fritted Discs, Reservoirs and $\frac{3}{4}$ 24/40 Joints

Chromatography columns manufactured from medium wall tubing with PTFE stopcock and in-line reservoir for containing liquid buffer. These columns have a coarse porosity glass frit (40-60 micron pore size) as a support for column packing material. These columns may be used alone or in combination with 420575-2440 flow control adapter. **Custom sizes and plastic coating are available upon request.**

Catalog Number	Column I.D. x Length (mm)	Volume (mL)	Reservoir Cap (mL)	Stopcock Bore (mm)	Case Qty.	Case Price
420620-0120	13 x 200	23	250	2	1	135.77
420620-0125	13 x 250	28	250	2	1	140.71
420620-0130	13 x 300	34	250	2	1	150.66
420620-0320	25 x 200	90	250	2	1	163.89
420620-0325	25 x 250	100	250	2	1	175.47
420620-0330	25 x 300	136	250	2	1	185.41
420620-0350	25 x 500	245	250	2	1	232.24
420620-0420	38 x 200	227	500	2	1	185.07
420620-0425	38 x 250	280	500	2	1	175.47
420620-0430	38 x 300	340	500	2	1	197.00
420620-0450	38 x 500	560	500	2	1	228.46
420620-0520	50 x 200	360	500	2	1	221.54
420620-0530	50 x 300	590	1000	2	1	249.99
420620-0550	50 x 500	980	1000	2	1	274.78
420620-0560	50 x 600	1180	1000	2	1	294.68
420620-0620	64 x 200	643	1000	4	1	250.90
420620-0630	64 x 300	965	1000	4	1	284.73
420620-0650	64 x 500	1600	2000	4	1	304.60
420620-0660	64 x 600	1920	2000	4	1	322.80
420620-0720	75 x 200	883	2000	4	1	312.53
420620-0730	75 x 300	1290	2000	4	1	341.04
420620-0750	75 x 500	2140	2000	4	1	397.32
420620-0760	75 x 600	2580	2000	4	1	427.13

Replacement Parts

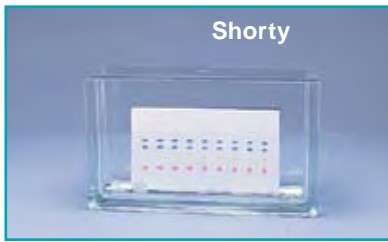
821001-0002	Stopcock Plug only, 2 mm	1	14.02
821001-0004	Stopcock Plug only, 4 mm	1	16.10



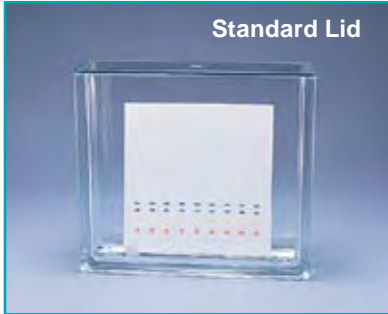
420610



420620



416180-1020



416180-0000



416185-0000



416190-0000



416190-4900

Rectangular TLC Developing Tanks

TLC Developing Tanks are manufactured from sturdy molded glass bricks that will withstand regular use for many years. The clear sides allow unobstructed visual inspection of TLC plates up to 20 x 20 cm in size. The top of the tanks are ground flat to match the lids and the edges are beveled to remove any sharp edges. The bottoms are ground to provide a flat, level surface. A raised ridge along the inside bottom allows the simultaneous development of two 20 x 20 cm or four 5 x 20 cm plates. Inside dimensions of the tanks are approximately 27cm W x 7cm D x 25cm H (10 5/8 x 2 7/8 x 9 3/4 inches). Weight is approximately 5.4 kg (12 pounds).

The tank lids are available in three styles: standard, nonslip and latch. Nonslip lids have a knob for easy lifting and PTFE retainers inside to prevent the lid from accidentally sliding off the tank. Latch lids are designed to hold them firmly to the developing tank, greatly improving the stability of the saturated environment for developing TLC plates. Latch lids also have a knob for easy removal and PTFE retainers. Lids in all three styles are available with holes drilled for #0 stoppers to allow addition of reagents without disturbing the equilibrium of the saturated environment.

The multiplate aluminum rack allows the simultaneous development of up to six 20 x 20 cm TLC plates. The rack is hard anodized to prevent corrosion.

TLC Tanks with Standard Lids

"SHORTY" tank was developed for use with 10 cm x 10 cm plates but it will also accommodate 5 x 10 or 10 x 20 plates, turned long side down. Both tanks have a raised ridge to support plates during development and are supplied with lids.

Catalog Number	Description	Use with Plate Size W x H (mm)	Case Qty.	Case Price
416180-0000	TLC Developing Tank with Standard Lid	20 x 20	1	161.15
416180-1020	TLC Developing Tank, "Shorty" with Standard Lid	10 x 20	1	150.19
Accessory Part				
416181-0000	TLC Standard Lid	10 x 20 or 20 x 20	1	30.55

TLC Tank with Nonslip Lid

Catalog Number	Description	Case Qty.	Case Price
416185-0000	TLC Developing Tank with Nonslip Lid	1	221.04
Component Parts			
416186-0000	TLC Nonslip Lid	1	72.72
416182-0000	TLC Developing Tank Only	1	149.77

TLC Tank with Latch Lid

Catalog Number	Description	Case Qty.	Case Price
416190-0000	TLC Developing Tank with Latch Lid	1	261.54
Component Parts			
416191-0000	TLC Latch Lid	1	76.62
416192-0000	TLC Developing Tank Only, Latch	1	192.36

TLC Tank with Latch Lid and Aluminum Rack

Catalog Number	Description	Case Qty.	Case Price
416190-4900	TLC Developing Tank with Latch Lid and Aluminum Rack	1	421.86
Component Parts			
416191-0000	TLC Latch Lid	1	76.62
416192-0000	TLC Developing Tank Only, Latch	1	192.36
416175-0000	TLC Aluminum Rack, Holds Six 20x20 cm Plates	1	182.23

Cylindrical TLC Developing Tanks with Lids

Cylindrical glass tanks for the development of 1 x 3 in. to 10 x 20 cm plates. These tanks provide maximum vapor phase saturation with a minimum amount of solvent.

Catalog Number	For Plate Size	Lid	Case Qty.	Case Price
416170-0510	5 x 10 cm	Glass	1	107.52
416170-0520	5 x 20 cm	Glass	1	115.58
416170-1020	10 x 20 cm	Glass	1	158.18
416170-1118	1 x 3 in.	Polyethylene	1	52.83
416170-1119	1 x 3 in.	Polyethylene	12	452.72
416170-1120	5 x 10 cm	Polyethylene	1	65.31
416170-1121	5 x 10 cm	Polyethylene	12	575.38
416170-1122	5 x 20 cm	Polyethylene	1	99.74
416170-1123	5 x 20 cm	Polyethylene	12	857.17

Component Parts

416170-1124	Polyethylene Cap For 1 x 3 in. Tanks	12	54.41
416170-1125	Polyethylene Cap For 5 x 10 cm and 5 x 20 cm Tanks	12	54.41
416171-0500	Glass Cap for 5 cm Tanks	1	33.25



416170

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416430



416450

TLC Plate Streaker

A simple device for uniformly streaking TLC plates. Unit consists of a stainless steel base with an adjustable holder for a glass reservoir. To operate, the streaker is placed over edge of the counter top and the plate to be streaked is positioned parallel to it. The bent capillary tip is then adjusted so that it lightly touches the plate. The reservoir is filled with the solution to be chromatographed and by moving the unit back and forth along the counter edge, a uniform streak is accomplished. Supplied complete with glass, stainless steel capillaries and instructions.

Reference: Journal of Chemical Education, Vol. 47, No. 5, May 1970, page 404, "A Simple Streaker for Preparative Layer Chromatography," L.J. Altman, James R. Trudell.

Catalog Number	Approx. Dimensions L x W x H (cm)	Case Qty.	Case Price
416430-0000	25 x 15 x 16	1	286.85

Component Parts

416431-0000	Base Assembly	1	207.53
416432-0000	Reservoir	1	39.33
416433-0000	Glass Capillary Set, (2 Small, 2 Large)	1	63.95
416434-0000	Stainless Capillary Set, (1 Small, 1 Large)	1	31.38

TLC Labeling Template

A transparent labeling template designed to fit over TLC plates without disturbing the absorbent layer. The apparatus features spotting guide ruler, compound and solvent travel distance markers and circles for estimation of spot sizes. Origin and 10 cm bold reference lines are provided to enable fast calculation of R_f-values.

Catalog Number	Approx. Dimensions L x W x H (cm)	Case Qty.	Case Price
416450-0000	22 x 20 x 1	1	105.04



764520



764500

TLC Spotting Capillaries, Borosilicate Glass, Microcaps®

Microcaps® are ingeniously simple in concept and in use. They are precision-bore glass capillary tubes, cut to predetermined lengths, so that each capillary tube will hold a known volume of fluid when filled. Microcaps are so inexpensive that it is not impractical to dispose of each tube after use.

Filling is simple. Capillary action - not externally applied suction - draws the

fluid into the tube. To dispense the fluid, simply squeeze the bulb. No unusual skills or training required. Immediate, professional results. Ideal for spotting preadsorbent TLC plates. Supplied in packages containing one bulb assembly and one dispenser vial with 100 micropipets. Volumetric tolerance is ±1%.

Catalog Number	Capacity (μL)	Length (mm)	Relative I.D. (in.)	Relative O.D. (in.)	Case Qty.	Case Price
764500-0000	0.5	32	.0056	.022	100	36.14
764500-0001	1.0	32	.0078	.025	100	29.90
764500-0002	2.0	32	.0111	.030	100	29.90
764500-0005	5.0	32	.0174	.0355	100	29.90
764500-0010	10.0	41	.0219	.0314	100	29.90
764500-0020	20.0	64	.0249	.0355	100	29.90
764500-0025	25.0	65	.0272	.0382	100	29.90
764500-0050	50.0	100	.0314	.043	100	29.90
764500-0100	100.0	116	.0410	.0555	100	29.90

TLC Spotting Capillaries, 5 Pack, Borosilicate, Microcaps®

The Microcaps "5 Pack" is ideal for use in spotting TLC plates. Each kit has 5 dispenser vials containing 100 micropipets each of 0.5, 1, 2, 5 and 10 μL sizes. Also included are a bulb assembly and spotting holder.

Catalog Number	Case Qty.	Case Price
764520-0000	1	111.71

TLC Reagent Sprayers with Screw Thread Ground Joints

The connection between the sprayer head and the flask is made with a special screw thread ground joint, connecting cap and loosening ring. If the joint ever “freezes” from reagent crystallization or residue formation, simply unscrew the connecting cap back onto the unique loosening ring and the joint will easily come apart. These sprayers will operate on as little as 1 psi (0.07 kg/cm²) air pressure with optimal results at 3-5 psi (0.21-0.35 kg/cm²). The connecting cap, loosening ring and o-ring should be removed before autoclaving.

Catalog Number	Flask Capacity (mL)	⌀ Joints	Approx. Height x OD (mm)	Case Qty.	Case Price
422530-0010	10	19/22	155 x 22	1	172.11
422530-0025	25	19/22	147 x 40	1	172.11
422530-0050	50	19/22	174 x 50	1	172.11
422530-0125	125	24/40	204 x 65	1	172.11
422530-0250	250	24/40	229 x 85	1	172.11
422530-0500	500	24/40	273 x 105	1	192.36

Component Parts

422531-0010	TLC Sprayer Head for 10 and 25 mL flasks	1	146.40
422531-0050	TLC Sprayer Head for 50 mL flasks	1	146.40
422531-0125	TLC Sprayer Head for 125 mL flasks	1	146.40
422531-0250	TLC Sprayer Head for 250 mL flasks	1	146.40
422531-0500	TLC Sprayer Head for 500 mL flasks	1	166.63
422532-0010	TLC Sprayer Flask, 10 mL	1	50.79
422532-0025	TLC Sprayer Flask, 25 mL	1	50.79
422532-0050	TLC Sprayer Flask, 50 mL	1	50.79
422532-0125	TLC Sprayer Flask, 125 mL	1	50.79
422532-0250	TLC Sprayer Flask, 250 mL	1	50.79
422532-0500	TLC Sprayer Flask, 500 mL	1	70.72
422533-0019	Connecting Cap, Size 19, (1 supplied)	5	23.44
422534-0019	Loosening Ring, Size 19, (1 supplied)	5	14.34



The loosening ring and joint are easily separated for cleaning.

422530

TLC Reagent Sprayers with Standard Ground Joints



422550



422540



422500

These units operate from 3-5 psi (0.21-0.35 kg/cm²). Their all-glass construction makes them completely steam autoclavable.

Catalog Number	Working Capacity (mL)	⌀ Joints	Approx. Height x OD (mm)	Case Qty.	Case Price
422550-0000	5	14/20	130 x 17	1	104.20
422540-0000	25	24/40	175 x 25	1	178.86
422500-0125	125	24/40	200 x 65	1	183.10
422500-0250	250	24/40	225 x 85	1	193.17

Component Parts

422551-0000	TLC Sprayer Only for 10 mL Tube	1	80.33
422501-0250	TLC Sprayer Only for 250 mL Flask	1	161.27
617000-0224	Flask, 125 mL, ⌀ 24/40 outer joint	1	27.54
617000-0424	Flask, 250 mL, ⌀ 24/40 outer joint	1	28.14



953930

ULTRA-WARE® HPLC Economy Cap Systems

The cap body is manufactured from PTFE and is supplied with a TFE/propylene o-ring and a polypropylene screw collar. The connecting threads on the top of the cap use standard 1/4-28 flangeless fittings. Two of the ports have 1/8" through holes, the third port has a 1/16" through hole. Assembly instructions are included.

The ULTRA-WARE Flat Bottom Reservoirs are manufactured from Type I, Class A borosilicate glass with a plastic safety coating. The plastic coating also blocks virtually all UV light up to 385 nm, preventing photodegradation of light sensitive mobile phases.

Economy Three Hole Cap Systems are supplied with:

953913-5000	1 ea.	Economy Three Hole Cap	420822-0018	2 ea.	Flangeless Ferrule, ETFE, 1/8"
953902-series	1 ea.	Ultra-Ware Flat Bottom Reservoir	953913-0001	1 ea.	Nut Plug, ETFE, 1/4-28
953916-3002	1 ea.	All PEEK Inlet/Spurge Filter, 2µm	420823-0018	1 ea.	FEP Tubing, 1/8" OD x 1/16" ID x 10 ft.
420821-0018	2 ea.	Flangeless Nut, ETFE, 1/4-28, 1/8"			

Catalog Number	Description	Case Qty.	Case Price
953930-1002	Economy Three Hole Cap System with 1 Liter Reservoir	1	230.28
953930-2002	Economy Three Hole Cap System with 2 Liter Reservoir	1	257.77
953930-5002	Economy Three Hole Cap System with 5 Liter Reservoir	1	441.65
953930-1003	Economy Three Hole Cap System with 10 Liter Reservoir	1	553.34

Replacement Parts for Economy Three Hole Caps

953913-5000	Replacement Economy Three Hole Cap (Body and Screw Collar)	1	50.70
953913-5001	Body, PTFE	1	38.68

Fittings Kit

Kit consists of 20' of 1/8" OD FEP tubing, 20 CTFE ferrules and 20 (1/4-28) ETFE nuts. Not pictured.

Catalog Number	Description	Case Qty.	Case Price
953882-0000		1	243.46



Bottle not included.

Safety System 3

Eliminates the safety hazards of aluminum foil-wrapped solvent containers.

- This unique Solvent Bottle Adapter is made from PBT and converts ULTRA-WARE® GL 45 mobile phase caps to standard 4L solvent bottles for direct connection to your HPLC pump.
- ULTRA-WARE® Economy Three Hole Cap is manufactured from PTFE with a TFE/propylene o-ring and a polypropylene screw collar. Three connecting threads on top of the cap use standard 1/4-28 flangeless fittings. Two ports have 1/8" through holes for connection to the inlet / spurge filter. The third port has a 1/16" through hole used as a vent port during sparging.

Each Safety System 3 consists of the following:

953913-5000	1 ea.	Economy Three Hole Cap, GL 45
953907-0000	1 ea.	Solvent Bottle Adapter, GL 45 (Systems available with or without adapter. See below.)
953916-3002	1 ea.	Combination Inlet / Spurge Filter, 2µm, PEEK
420821-0018	2 ea.	Flangeless Nut, ETFE, 1/4-28 x 1/8" (2 Req'd.)
420822-0018	2 ea.	Flangeless Ferrule, ETFE, 1/8" (Optional - 2 Req'd.)
953913-0001	1 ea.	Vent Port Plug, ETFE, 1/4-28 (1 Req'd.)
420823-0018	1 ea.	Tubing, FEP, 1/8" O.D. x 1/16" I.D. x 10 ft.

Catalog Number	Description	Case Price
953930-0000	Safety System 3 with GL 45 Bottle Adapter	186.51
953930-0001	Safety System 3 without GL 45 Bottle Adapter	126.04

Port for sparging line (optional use)

Port for solvent intake line

Filter
Catalog No.
953916-3002

Draws solvent from bottom of solvent bottle

Filters incoming sparging gas (optional use)

Unique Filter Combines Functions to Increase Efficiency

Included with your Safety System 3 is the unique Bottom-of-the-Bottle™ Inlet / Spurge Filter. This component combines the functions of an inlet filter with a sparger in a single, convenient device. Sparging bubbles are prevented from entering the mobile phase stream while allowing the pump to draw all but a few milliliters of solvent from the reservoir or bottle. All PEEK construction makes it ideal for virtually all mobile phases. Supplied with 2µm porosity frits and connections for 1/8" O.D. tubing.

Plastic-Coated ULTRA-WARE® Reservoirs

ULTRA-WARE Reservoirs have been specially designed for the preparation, storage and delivery of all liquid chromatography mobile phases. Each ULTRA-WARE Reservoir is manufactured from the most chemically inert glass available to prevent the leaching of any extractables into the mobile phase solvents. They are then externally coated with plastic containing an added ultraviolet (UV) blocking agent. In case of an accident, the plastic safety coating helps retain glass fragments and allows a reasonable amount of time for the safe disposal of the liquid contents. The plastic coating also blocks virtually all UV light up to 385 nm, preventing photodegradation of light sensitive reagents.

ULTRA-WARE Reservoirs are recommended for use under vacuum for filtration and vacuum degassing of mobile phase solvents. ULTRA-WARE Reservoirs can also be used at internal pressures up to 6 psig for helium sparging and blanketing of the mobile phase. The conical bottom reservoirs deliver virtually all of the mobile phase without dangerous reservoir tilting. All ULTRA-WARE Reservoirs are supplied with GL 45 screw thread. *Patent No. Des. 292,824

Conical Bottom HPLC Reservoirs without Graduations

Catalog Number	Capacity	Height x Dia.	Case Qty.	Case Price
953901-0252	250 mL	203 x 85 mm	1	117.73
953901-0502	500 mL	230 x 105 mm	1	115.56
953901-1002	1 liter	275 x 130 mm	1	131.11
953901-2002	2 liter	319 x 150 mm	1	202.50
953901-5002	5 liter	373 x 205 mm	1	340.00
953901-1003	10 liter	433 x 255 mm	1	857.50
953901-2003	20 liter	578 x 315 mm	1	1400.00

Conical Bottom HPLC Reservoirs with Graduations

Catalog Number	Capacity	Height x Dia.	Case Qty.	Case Price
953922-0252	250 mL	203 x 85 mm	1	123.72
953922-0502	500 mL	230 x 105 mm	1	154.67
953922-1002	1 liter	275 x 130 mm	1	189.04
953922-2002	2 liter	319 x 150 mm	1	271.51
953922-5002	5 liter	373 x 205 mm	1	463.99
953922-1003	10 liter	433 x 255 mm	1	1074.05
953922-2003	20 liter	578 x 315 mm	1	1761.46

Conical Bottom HPLC Reservoirs with Side Necks and Graduations

Side neck allows addition of filtered solvent without removing delivery cap.

Catalog Number	Capacity	Height x Dia.	Case Qty.	Case Price
953910-2002	2 liter	319 x 150 mm	1	394.22
953910-5002	5 liter	373 x 205 mm	1	587.05
953910-1003	10 liter	433 x 255 mm	1	1035.58
953910-2003	20 liter	578 x 315 mm	1	1836.47

Flat Bottom HPLC Reservoirs without Graduations

Catalog Number	Capacity	Height x Dia.	Case Qty.	Case Price
953902-0252	250 mL	133 x 73 mm	1	69.26
953902-0502	500 mL	165 x 89 mm	1	85.23
953902-1002	1 liter	205 x 111 mm	1	119.01
953902-2002	2 liter	250 x 138 mm	1	152.10
953902-5002	5 liter	320 x 186 mm	1	340.26
953902-1003	10 liter	400 x 234 mm	1	481.17
953902-2003	20 liter	490 x 300 mm	1	1003.57

Flat Bottom HPLC Reservoirs with Graduations

Catalog Number	Capacity	Height x Dia.	Case Qty.	Case Price
953932-0252	250 mL	203 x 85 mm	1	77.33
953932-0502	500 mL	230 x 105 mm	1	103.11
953932-1002	1 liter	275 x 130 mm	1	128.89
953932-2002	2 liter	319 x 150 mm	1	158.10
953932-5002	5 liter	373 x 205 mm	1	352.32
953932-1003	10 liter	433 x 255 mm	1	493.23
953932-2003	20 liter	578 x 315 mm	1	1013.90



953902

Specifications ULTRA-WARE HPLC Reservoirs

Materials:

Reservoir: Type I, Class A,
Borosilicate Glass

Plastic Coating: PVC with UV
blocking agent

Screw Thread: GL 45

Operating Pressure: -1.0 to 0.4 bar

UV Transmittance: <1% up to 385 nm



953906

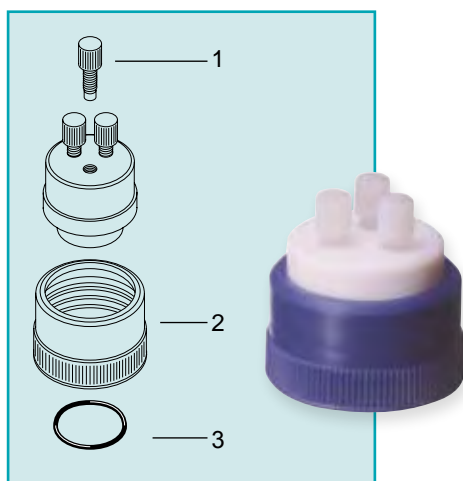
ULTRA-WARE® Solvent Pickup Adapter

Designed to be used with the Five Valve, Four Valve and Filtration caps to provide safe, in-line filtration that replaces the traditional pour-and-wait funnel filtration method. The unique BEVEL-SEAL® makes a vacuum tight o-ring connection to the PTFE tubing. The HI-VAC® valve is easier to open under vacuum than the standard stopcock. Closing the valve provides vacuum degassing after filtration. Each unit is supplied with 3 feet (91 cm) of 1/4" O.D. FEP tubing. Valve o-ring size is 010 and sidearm o-ring size is 108.

Catalog Number	Description	Case Qty.	Case Price
953906-0047	Pickup Adapter, Standard, 47 mm	1	135.71
953906-6347	Pickup Adapter, THF-Resistant, 47 mm	1	293.87
953906-0090	Pickup Adapter, Standard, 90 mm	1	249.19
953906-6390	Pickup Adapter, THF-Resistant, 90 mm	1	357.45

Replacement Parts

953906-0001	(1) Valve Plug Assembly, Std.	1	42.43
953906-0002	(2) Glass Pickup Adapter Body, 47mm	1	134.90
953906-0092	(2) Glass Pickup Adapter Body, 90mm	1	189.04
410119-1508	(3) Cap, Nylon, 15-415, 8.5mm	12	19.26



953913-0000

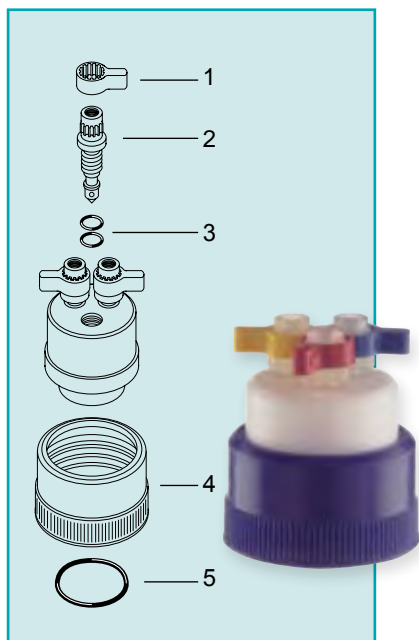
ULTRA-WARE® Three Hole Delivery Cap

Three holes have 1/4-28 threads top and bottom with 1/8" I.D. holes through to accept 1/8" O.D. PTFE tubing. Body is PTFE. Supplied complete with three 1/4-28 CTFE plugs and a TFE / propylene o-ring.

Catalog Number	Description	Cap Thread	Case Qty.	Case Price
953913-0000	Three Hole Cap	GL 45	1	163.26

Replacement Parts

953913-0001	(1) Plug, ETFE, 1/4-28	1	4.14
953903-0005	(2) Screw Cap, GL 45	1	25.10
758260-0216	(3) O-Ring, TFE / Propylene, Size 216	1	call for price



953903-0000

ULTRA-WARE® Three Valve Delivery Cap

Three on-off CTFE valves have 1/4-28 threads top and bottom. Valve body is PTFE. Valve stem is CTFE. O-ring material for valve stem and lower seal is TFE / propylene.

Catalog Number	Description	Cap Thread	Case Qty.	Case Price
953903-0000	Three Valve Cap	GL 45	1	457.12

Replacement Parts

953903-0002	(1) Valve Handle, Blue	1	6.69
953903-0003	(1) Valve Handle, Red	1	6.69
953903-0004	(1) Valve Handle, Yellow	1	6.69
953903-0042	(2) Valve Stem, CTFE, Short	1	18.40
758260-0008	(3) O-Ring, TFE / Propylene, Size 008 (2 required per CTFE Valve Stem)	1	call for price
953903-0005	(4) Screw Cap, GL 45	1	25.10
758260-0216	(5) O-Ring, TFE / Propylene, Size 216	1	call for price

THF-resistant versions of ULTRA-WARE® caps are also available. Please call 888-546-2531 for more information.



953915-0047

ULTRA-WARE® Filtration Cap

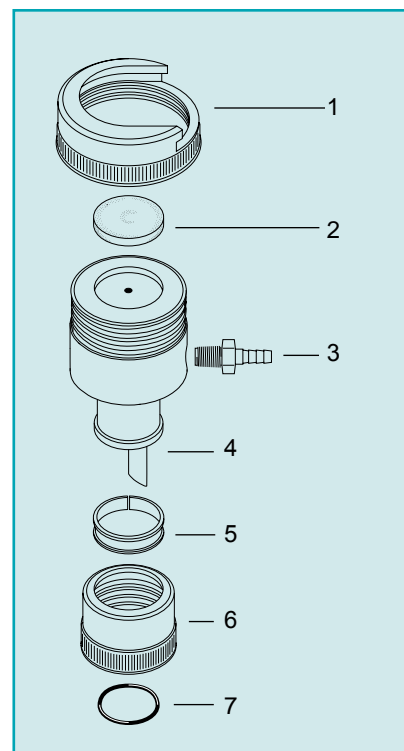
Body is constructed of glass-filled PTFE with a vacuum adapter for 1/4" I.D. tubing. Upper screw clamp holds a solvent pickup adapter or funnel. Coarse fritted glass filter support is removable. Supplied with a PTFE / propylene o-ring.

Catalog Number	Filter Diameter	Cap Thread	Case Qty.	Case Price
953915-0047	47 mm	GL 45	1	327.27

Replacement Parts

953914-0002	(1) Upper Screw Clamp, 47 mm	1	47.16
953914-0001	(2) Coarse Porosity Glass Support Frit, 47 mm	1	42.08
953915-0001	(3) Hose Barb, PFA, 1/4"	1	57.90
953914-0006	(4) Drip Tip, PTFE	1	17.70
953981-0004	(5) Lower Cap Retainer Ring	1	19.43
953981-0005	(6) Lower Screw Cap, GL 45	1	25.10
758292-0122	(7) O-Ring, Ethylene Propylene, Size 122	10	call for price

Filtration cap, **953915-0047** shown with Solvent Pickup Adapter, **953906-0047**, and ULTRA-WARE, safety-coated reservoir, **953901-series**, available for purchase separately. The safety coating contains an ultraviolet (UV) blocking agent to help protect solvents from degradation.



953981-0047

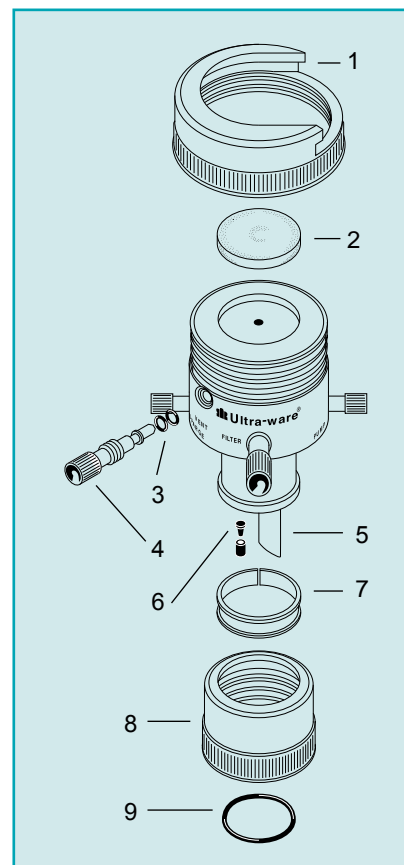
ULTRA-WARE® Four Valve Filtration / Delivery Cap

Cap combines the mobile phase filtration, sparging / degassing, storage and delivery functions. Tubing connections are made in the back of the cap, reducing the typical clutter of tubing at the reservoirs. An integral check valve in the sparge port prevents the mobile phase from backing up into the gas lines. A pressure release valve prevents the reservoir from being accidentally over-pressurized. The 1/4-28 fitting connections allow easy connection to any HPLC pump system. Cap body is manufactured from glass-filled PTFE. Cap will fit any reservoir or bottle with a GL 45 thread. Patent No. 5,397,467

Catalog Number	Filter Diameter	Cap Thread	Case Qty.	Case Price
953981-0047	47 mm	GL 45	1	560.00

Replacement Parts

953914-0002	(1) Upper Screw Clamp, 47 mm	1	47.16
953914-0001	(2) Coarse Porosity Glass Support Frit, 47 mm	1	42.08
758260-0008	(3) O-Ring, TFE / Propylene, Size 008 (2 req'd. per CTFE Valve Stem)	1	call for price
953981-0001	(4) Valve Stem, CTFE, Short (for Sparge and Pump Ports)	1	29.05
953914-0006	(5) Drip Tip, PTFE	1	17.70
953981-0003	(6) Check Valve with Retainer	1	19.43
953981-0004	(7) Lower Cap Retainer Ring	1	19.43
953981-0005	(8) Lower Screw Cap, GL 45	1	25.10
758292-0122	(9) O-Ring, Ethylene Propylene, Size 122	10	call for price



THF-resistant versions of ULTRA-WARE® caps are also available. Please call 888-546-2531 for more information.

Five valve cap, **953983-0047** shown with Solvent Pickup Adapter, **953906-0047**, and ULTRA-WARE, safety-coated reservoir, **953901-series**, available for purchase separately. The safety coating contains an ultraviolet (UV) blocking agent to help protect solvents from degradation.



ULTRA-WARE® Five Valve Recirculation / Filtration Cap

Designed to permit the recirculation of mobile phase back into the reservoir while maintaining the helium sparged environment. Cap also performs stepwise filtration, sparging / degassing, storage and delivery to the HPLC pump. An integral check valve prevents mobile phase from backing up into the gas lines. A pressure release valve protects the reservoir from being accidentally over-pressurized. The 1/4-28 fitting connections allow easy connection to any HPLC pump system. Cap body is manufactured from glass-filled PTFE. Cap will fit any reservoir or bottle with a GL 45 thread. Patent No. 5,397,467

Catalog Number	Filter Diameter	Cap Thread	Case Qty.	Case Price
953983-0047	47 mm	GL 45	1	620.69

Replacement Parts

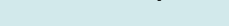
953914-0002	(1) Upper Screw Clamp, 47 mm	1	47.16
953914-0001	(2) Coarse Porosity Glass Support Frit, 47 mm	1	42.08
758260-0008	(3) O-Ring, TFE / Propylene, Size 008 (2 required per Valve Stem)	1	call for price
953981-0001	(4) Valve Stem, CTFE, Short (for Sparge and Pump Ports)	1	29.05
953914-0006	(5) Drip Tip, PTFE	1	17.70
953981-0003	(6) Check Valve with Retainer	1	19.43
953981-0004	(7) Lower Cap Retainer Ring	1	19.43
953981-0005	(8) Lower Screw Cap, GL 45	1	25.10
758292-0122	(9) O-Ring, Ethylene Propylene, Size 122	10	call for price

THF-resistant versions of ULTRA-WARE® caps are also available. Please call 888-546-2531 for more information.

1. Coarse Glass Frit



2. Screw Clamp



90 mm Conversion Base for ULTRA-WARE® Caps

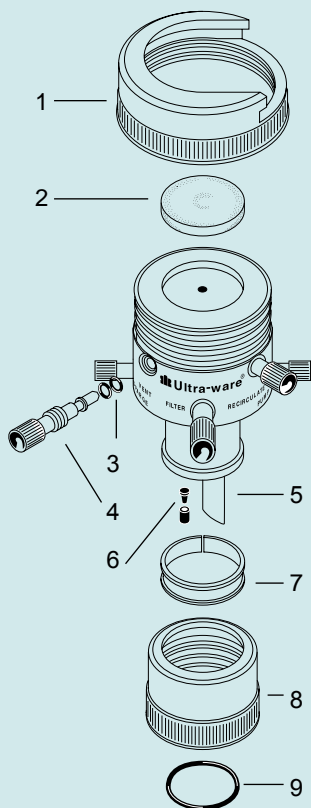
Converts the Five Valve, Four Valve and Filtration caps to use 90 mm filter membranes, providing up to four times faster filtration. The conversion base is manufactured from glass-filled PTFE and is supplied with a coarse porosity glass support frit and an upper screw clamp. Requires a 90 mm Solvent Pickup Adapter, 953906-0090 or THF-resistant 953906-6390.

Catalog Number	Description	Case Qty.	Case Price
953984-0090	90 mm Conversion Base	1	290.43

Replacement Parts

953914-0092	(1) Upper Screw Clamp, 90 mm	1	86.96
953914-0091	(2) Glass Support Frit, Coarse, 90 mm	1	116.13

For a complete listing of chromatography columns and fittings, visit our website: www.kimble-chase.com



ULTRA-WARE® Fittings Kit, Standard Version

This kit contains all of the tube fittings, adapters and solvent inlet filters required to plumb any ULTRA-WARE cap to virtually all HPLC pumps. Not recommended for use with THF or chlorinated hydrocarbons.

Catalog Number	Description	Case Qty.	Case Price
953882-1000	Fittings Kit, Standard Version	1	327.91

Component Parts	Description	Quantity in Kit	Case Qty.	Case Price
420407-2003	Adapter, F 1/4-28 to F-Luer	2	1	15.70
420407-2113	Adapter, M 1/4-28 to M-Luer	1	1	7.44
420818-3305	Union, 5/16-24 to 1/4-28	1	1	28.15
420821-0018	Tubing Nut, 1/4-28, for 1/8" O.D.	10	1	4.14
420821-0618	Tubing Nut, M6, for 1/8" O.D.	1	1	2.99
420821-3519	Tubing Nut, 5/16-24, for 3/16" O.D.	1	1	9.76
420822-0018	Ferrule, for 1/8" O.D.	10	1	3.15
420822-1019	Ferrule, for 3/16" O.D.	1	1	5.14
420822-2007	Ferrule, for 1.8 mm O.D.	2	1	3.15
953916-0000	Inlet Filter, for 1/8" O.D. Tubing	1	1	48.36
953916-1002	Inlet Filter, Bottom-of-the-Bottle™, for 1/8" O.D. Tubing	1	1	109.73
953919-0014	Adapter, 1/4-28 to 1/4" Hose Barb	1	1	8.61



953882-1000

ULTRA-WARE® Fittings Kit, THF-Resistant

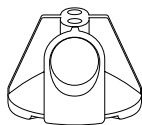
This kit contains all of the tube fittings, adapters and solvent inlet filters required to plumb any ULTRA-WARE cap to virtually all HPLC pumps. However, it is designed to be used specifically with THF or other very aggressive organic solutions.

Catalog Number	Description	Case Qty.	Case Price
953882-2000	Fittings Kit, THF Version	1	327.91

Component Parts	Description	Quantity in Kit	Case Qty.	Case Price
420407-2003	Adapter, F 1/4-28 to F-Luer	2	1	15.70
420407-2113	Adapter, M 1/4-28 to M-Luer	1	1	7.44
420818-3305	Union, 5/16-24 to 1/4-28	1	1	28.15
420821-0018	Tubing Nut, 1/4-28, for 1/8" O.D.	10	1	4.14
420821-0618	Tubing Nut, M6, for 1/8" O.D.	1	1	2.99
420821-3519	Tubing Nut, 5/16-24, for 3/16" O.D.	1	1	9.76
420821-6218	Tubing Nut, 1/4-28, for 1/8" O.D.	2	1	32.96
420822-0018	Ferrule, for 1/8" O.D.	10	1	3.15
420822-1019	Ferrule, for 3/16" O.D.	1	1	5.14
420822-2007	Ferrule, for 1.8 mm O.D.	2	1	3.15
953916-2002	Inlet Filter, BOTB, for 1/16" I.D.	1	1	34.94
953916-6210	Inlet Filter, for 1/16" I.D.	1	1	39.75
953919-0014	Adapter, 1/4-28 to 1/4" Hose Barb	1	1	8.61



953882-2000

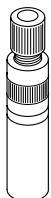


953916-3002

Inlet / Sparge Filter

The inlet/sparge filter combines an inlet filter with a sparger in a single, convenient device. The all PEEK construction is ideal for virtually all mobile phases. The special design prevents sparging bubbles from entering the mobile phase stream while allowing the pump to draw all but a few milliliters of solvent from the reservoir. The inlet/sparge filter is supplied with 2 µm porosity frits and connections for 1/8" O.D. tubing.

Catalog Number	O.D. x Length	Porosity	Fits Tubing Size	Case Qty.	Case Price
953916-3002	1.1" x 0.8"	2 µm	1/8" O.D.	1	44.06



953916-1002

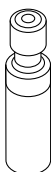


953916-2002

ULTRA-WARE® Inlet Filter, Bottom-of-the-Bottle™

A specially designed inlet filter that allows solvent to be drawn to within 2 mm of the bottom of the filter. Combined with the ULTRA-WARE conical bottom reservoir, this filter will utilize all but a few milliliters of mobile phase for more efficient use of your solvent.

Catalog Number	O.D. x Length	Fits Tubing Size	Case Qty.	Case Price
953916-1002	1/2" x 1 3/4"	1/8" O.D.	1	109.73
953916-2002	1/2" x 1"	1/16" I.D.	1	34.94



953916-0000

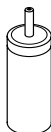
ULTRA-WARE® Stainless Steel Solvent Inlet Filter

Two micron porosity filter with a CTFE nut for connection to 1/8" O.D. PTFE tubing. Recommended for use with the 250 mL to 5 liter size reservoir systems.

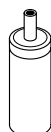
Catalog Number	O.D. x Length	Case Qty.	Case Price
953916-0000	1/2" x 1"	1	48.36

Component Parts

953916-0001	SS Filter Only	1	26.33
953916-0002	CTFE Nut	1	24.81



953916-6210

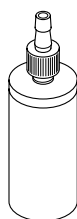


953916-6220

ULTRA-WARE® Stainless Steel Solvent Inlet Filter

Ten micron porosity all stainless steel filter with a stem for slip connection to PTFE tubing. Recommended for use with THF-resistant systems.

Catalog Number	O.D. x Length	Stem O.D.	Fits Tubing Size	Case Qty.	Case Price
953916-6210	1/2" x 1"	1/16"	1/8" O.D.	1	39.75
953916-6220	1/2" x 1"	1/8"	3/16" O.D.	1	39.75



953917-0000

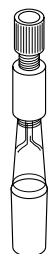
ULTRA-WARE® Stainless Steel Solvent Inlet Filter

Ten micron porosity filter with an ETFE nut and ferrule for connection to 1/8" O.D. PTFE tubing. A CTFE hose barb adapter for connection to 1/4" O.D. (5/32" I.D.) tubing is also included. Recommended for use with 10 and 20 liter size reservoir systems.

Catalog Number	O.D. x Length	Case Qty.	Case Price
953917-0000	7/8" x 1 1/2"	1	113.05

Component Parts

953917-0001	Filter Only	1	101.03
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953916-2700

ULTRA-WARE® Glass Solvent Inlet Filter

Five micron porosity filter with a CTFE union, 1/4-28 nut and ferrule for connection to 1/8" O.D. tubing.

Catalog Number	O.D. x Length	Case Qty.	Case Price
953916-2700	1/2" x 2"	1	114.27

Component Parts

H88800-0000	Union, 1/4-28, CTFE	1	11.08
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2mL and 4mL Autosampler Vials without Closures

- Choice of clear KG-33 or amber 203 borosilicate glass
- Available with or without marking spots
- Made in the USA

Made of the highest quality materials, Kimble Chase vials meet or exceed industry specifications and tolerances. These products are available in a variety of standard sizes and finishes. Vials are made from clear, Type 1 borosilicate, 33 expansion glass or amber, Type 1, borosilicate, 51 expansion glass for light sensitive applications. Vials are packed 100 per tray. Vials with large opening and/or marking spots are also available. Closures are not included.



12 x 32 mm Vials



15 x 45 mm Vials

Clear Vials

Catalog Number	Cap. (mL)	O.D. x Ht. (mm)	Finish	Pack Qty.	Case Qty.	Case Price
331232C	2	12 x 32	crimp	100	2000	362.91
331232CW	2	12 x 32	crimp with marking spot, graduated	100	2000	341.52
331232CL	2	12 x 32	crimp large opening	100	2000	385.60
331232CLW	2	12 x 32	crimp large opening w/ marking spot	100	2000	408.28
331232S	2	12 x 32	screw thread, 8-425	100	2000	325.05
331232SN	2	12 x 32	screw thread, 9-425	100	2000	402.80
331232SW	2	12 x 32	screw thread, 9-425 w/ marking spot, grad.	100	2000	412.80
331545S	4	15 x 45	screw thread, 13-425	100	2000	521.69
331545SW	4	15 x 45	screw thread, 13-425 w/ marking spot	100	2000	567.05

Amber Vials

Catalog Number	Cap. (mL)	O.D. x Ht. (mm)	Finish	Pack Qty.	Case Qty.	Case Price
511232CA	2	12 x 32	crimp	100	2000	382.96
511232CAW	2	12 x 32	crimp w/ marking spot	100	2000	403.68
511232CLA	2	12 x 32	crimp large opening	100	2000	382.96
511232CLAW	2	12 x 32	crimp large opening w/ marking spot	100	2000	382.96
511232SA	2	12 x 32	screw thread, 8-425	100	2000	382.96
511232DPA	2	12 x 32	screw thread, 9-425	100	2000	392.96
511232SAW	2	12 x 32	screw thread, 9-425 w/ marking spot, grad.	100	2000	402.96
511545SA	4	15 x 45	screw thread, 13-425	100	2000	567.05
511545SAW	4	15 x 45	screw thread, 13-425 w/ marking spot	100	2000	612.42

Aluminum Seals, with PTFE-Faced Silicone Rubber Liners

- Good for resealability, core resistance, multiple injections, and easy penetration

Catalog Number	Fits GPI Aluminum Seal Finish	Color	Thickness, Inches PTFE	Thickness, Inches Silicone Rubber	Case Qty.	Case Price
N73824-11	11	natural	0.002	0.040	100	118.45



N73824 Series

Aluminum Seals, with PTFE-Faced Red Rubber Septa

- Most popular and economical choice for general GC applications
- Moderate resealability
- Not recommended for multiple injections or long-term storage

Catalog Number	Fits GPI Aluminum Seal Finish	Color	Thickness, Inches PTFE	Thickness, Inches Red Rubber	Case Qty.	Case Price
N73826-11	11	red	0.002	0.040	1000	176.13



N73826 Series

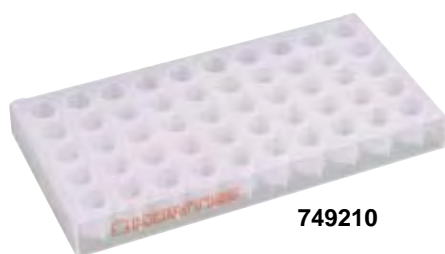
Kimble Chase caps are manufactured using the highest quality raw materials and designed for an ideal fit with our autosampler vials.



Pre-assembled caps and septa minimize contamination due to handling.



73814BK



749210

Open-Top Polypropylene Screw Thread Closures with Red PTFE-Faced Silicone Septa

- Convenient assembly of caps and liners
- Available with standard or pre-slit septa

Autoclavable and used for multiple injections.

Catalog Number	GPI Thread Finish	Septa	Color	Shelf-Pack Qty.	Case Qty.	Case Price
73812BK-8425	8-425	standard	black	100	1000	339.90
73813BK-8425	8-425	pre-slit	black	100	1000	412.00
73812WH-8425	8-425	standard	white	100	1000	339.90
73813WH-8425	8-425	pre-slit	white	100	1000	412.00
73812BK-9425	9-425	standard	black	100	1000	339.90
73813BK-9425	9-425	pre-slit	black	100	1000	412.00
73812BL-9425	9-425	standard	blue	100	1000	339.90
73813BL-9425	9-425	pre-slit	blue	100	1000	412.00
73812BK-13425	13-425	standard	black	100	1000	339.90
73813BK-13425	13-425	pre-slit	black	100	1000	412.00
73812WH-13425	13-425	standard	white	100	1000	339.90
73813WH-13425	13-425	pre-slit	white	100	1000	412.00

Open-Top Polypropylene Screw Thread Closures with Bonded White PTFE Liners

- Intended for single-use injection

Catalog Number	GPI Thread Finish	Color	Case Qty.	Case Price
73814WH-8425	8-425	white	1000	283.25
73814BL-9425	9-425	blue	1000	283.25
73814BK-13425	13-425	black	1000	283.25

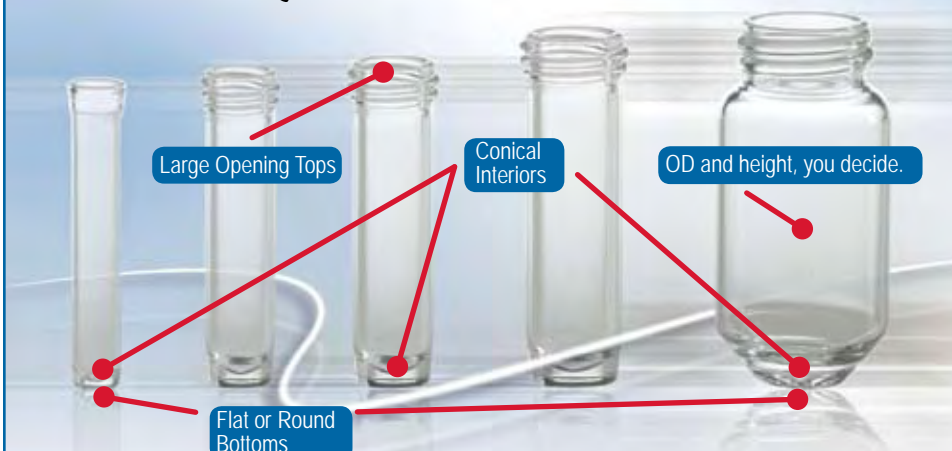
Polypropylene Rack for 12 mm OD Vials

Disposable polypropylene vial rack is lettered and numbered for indexing individual vials. Corners interlock for convenient stacking.

Catalog Number	Hole Diameter x Depth (mm)	Case Qty.	Case Price
749210-0012	12 x 15	10	69.15



High Recovery Vials Made to Your Specifications



• Accuracy • Reliability • Quality • Affordability

We can manufacture any vial you can dream up.

Flat Exterior Bottoms

- Ideal for bar coding
- Sized to fit any tray design
- Inherently stable

Conical Interior Bottoms

- Maximize your sample recovery
- Minimizes the use of costly samples
- Designed based on your needle type

Finishes

- Aluminum seal
- Screw thread
- Plug style

Available Value Added Services

- Permanent sample ID (PSID)
- Fused on or laser etched labels
- All symbologies - 1D, 2D
- Universal readability
- Pre-labeled and pre-tared
- Pre-weighed with documentation

Cat. No.	Pg.	Cat. No.	Pg.	Cat. No.	Pg.	Cat. No.	Pg.	Cat. No.	Pg.	Cat. No.	Pg.	Cat. No.	Pg.	Cat. No.	Pg.
331232C	29	420400-2511	9	420510-0625	15	420540-0520	15	420610-0660	17	420830-3010	3	422540-0000	21	953906-0047	24
331232CL	29	420400-2512	9	420510-0630	15	420540-0525	15	420610-0720	17	420830-3020	3	422550-0000	21	953906-0090	24
331232CLW	29	420400-2515	9	420510-0650	15	420540-0530	15	420610-0730	17	420830-6000	3	422551-0000	21	953906-0092	24
331232CW	29	420400-2520	9	420510-0660	15	420540-0550	15	420610-0750	17	420830-6010	3	511232CA	29	953906-6347	24
331232S	29	420400-2530	9	420510-0720	15	420540-0560	15	420610-0760	17	420830-6020	3	511232CAW	29	953906-6390	24
331232SN	29	420400-2550	9	420510-0725	15	420540-0620	15	420620-0120	17	420831-1000	3	511232CLA	29	953910-1003	23
331232SW	29	420400-2575	9	420510-0730	15	420540-0625	15	420620-0125	17	420831-1010	3	511232CLAW	29	953910-2002	23
331545S	29	420401-0704	9	420510-0750	15	420540-0630	15	420620-0130	17	420831-1020	3	511232DPA	29	953910-2003	23
331545SW	29	420401-0705	9	420510-0760	15	420540-0650	15	420620-0320	17	420831-1200	3	511232SA	29	953910-5002	23
410119-1508	24	420401-0710	9	420530-0125	14	420540-0660	15	420620-0325	17	420831-1210	3	511232SAW	29	953913-0000	24
416170-0510	19	420401-0715	9	420530-0130	14	420540-0720	15	420620-0330	17	420831-1220	3	511545SA	29	953913-0001	24
416170-0520	19	420401-0720	9	420530-0150	14	420540-0725	15	420620-0350	17	420831-1500	3	511545SAW	29	953913-5000	22
416170-1020	19	420401-0730	9	420530-0211	14	420540-0730	15	420620-0420	17	420831-1510	3	617000-0224	21	953913-5001	22
416170-1118	19	420401-0750	9	420530-0212	14	420540-0750	15	420620-0425	17	420831-1520	3	617000-0424	21	953914-0001	25
416170-1119	19	420401-1005	9	420530-0213	14	420540-0760	15	420620-0430	17	420831-3000	3	73812BK-13425	30	953914-0002	25
416170-1120	19	420401-1010	9	420530-0214	14	420540-2610	15	420620-0450	17	420831-3010	3	73812BK-8425	30	953914-0006	25
416170-1121	19	420401-1011	9	420530-0220	14	420550-0120	16	420620-0520	17	420831-3020	3	73812BK-9425	30	953914-0091	26
416170-1122	19	420401-1012	9	420530-0221	14	420550-0125	16	420620-0530	17	420831-6000	3	73812BL-9425	30	953914-0092	26
416170-1123	19	420401-1015	9	420530-0222	14	420550-0130	16	420620-0550	17	420831-6010	3	73812WH-13425	30	953915-0001	25
416170-1124	19	420401-1020	9	420530-0225	14	420550-0150	16	420620-0560	17	420831-6020	3	73812WH-8425	30	953915-0047	25
416170-1125	19	420401-1030	9	420530-0226	14	420550-0213	16	420620-0620	17	420832-2100	3	73813BK-13425	30	953916-0000	27
416171-0500	19	420401-1050	9	420530-0232	14	420550-0220	16	420620-0630	17	420832-2110	3	73813BK-8425	30	953916-0001	28
416171-3412	19	420401-1505	9	420530-0233	14	420550-0224	16	420620-0650	17	420832-2120	3	73813BK-9425	30	953916-0002	28
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416180-1020	18	420401-1515	9	420530-0244	14	420550-0234	16	420620-0750	17	420833-0000	3	73814BK-13425	30	953916-3002	28
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416186-0000	18	420401-1550	9	420530-0255	14	420550-0256	16	420809-0540	3	420833-1010	4	758240-0010	5	953917-0001	28
416190-0000	18	420401-1575	9	420530-0265	14	420550-0320	16	420809-1010	3	420833-1020	4	758240-0116	5	953918-2306	7
416190-4900	18	420401-2505	9	420530-0273	14	420550-0325	16	420809-1011	5	420836-0000	5	758240-0222	5	953918-2313	7
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416433-0000	20	420401-2530	9	420530-0414	14	420550-0450	16	420809-2040	3	420837-0040	6	758260-0116	5	953922-1003	23
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416450-0000	20	420401-2575	9	420530-0420	14	420550-0525	16	420811-2011	5	420870-1010	4	758260-0222	5	953922-2003	23
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420400-1020	9	420510-0250	15	420540-0224	15	420610-0130	17	42							

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