

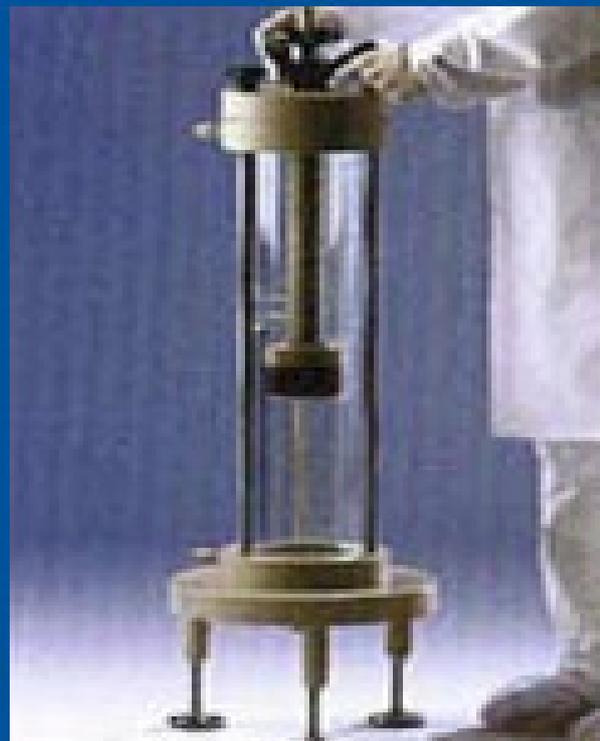
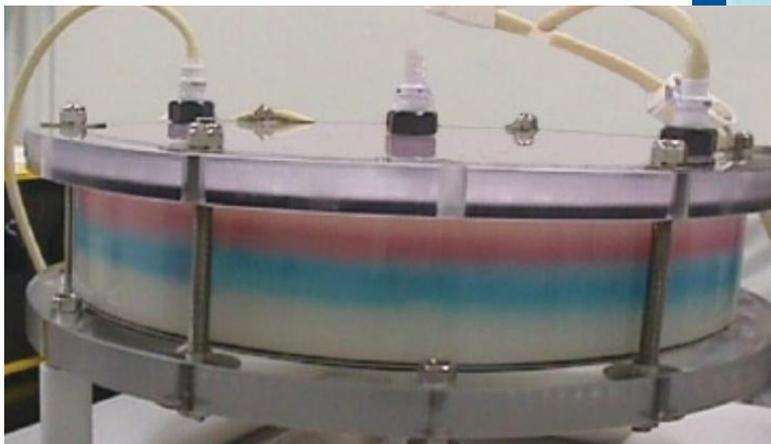
LC Chromatography Columns

Low Pressure to 1500psi

analytical / semi Prep to PREP to Huge PREP

6mm to 50mm
to 2.5metre

*essential*Life Solutions



Econoline® Columns
Media_Flex® Columns
IsoKrom™ Columns
Upscale® Columns
Glass Series/Acrylic Series
Pumping Systems

HROMalytic +61(0)3 9762 2034
ECHnology Pty Ltd

Australian Distributors
Importers & Manufacturers
www.chromtech.net.au

12/13

Website NEW : www.chromalytic.com.au E-mail : info@chromtech.net.au Tel: 03 9762 2034 . . . in AUSTRALIA

essentialLife Solutions

*for preparative
chromatography*

Versatile High-Performance
**Econoline[®] Laboratory
Glass Columns**

for ion exchange, size exclusion,
normal/reversed phase and affinity chromatography



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General information:

Any/all information contained within subject to change without notice.

General



Biochromatography is widely applied in high-performance downstream processing techniques that can be used for a range of compounds, such as proteins, peptides or nucleic acids. When using various chromatographic techniques such as ion exchange, affinity or gel permeation chromatography, increasingly high-performance separation media are used and, as a result, higher demands are made on the quality of the column hardware.

Econoline® glass columns meet the highest criteria for professional laboratory use. Particular attention has been paid to the column volume ranges that are as wide

as possible (0.4–982 ml) and to the high pressure resistance (up to 80 bar / 1160 psi), so that high flow rates and performance/efficiency can be achieved.

We have selected high-quality, inert materials to make sure Econoline® glass columns are biocompatible and offer the best conditions for high recovery with no loss of bio-activity of your biomolecules. Thanks to the “Quick-Lock” seal and the two adjustable pistons, the columns are fully adjustable and easy to use.

Given the wide range of diameters, frit porosities and lengths available, you can use Econoline® glass columns for the most diverse of applications.

Quick-Lock Fitting



No more than a quarter turn is needed to seal the column. Piston height adjustment is done by turning the locked “Quick-Lock” fitting.

Advantages of Econoline® Glass Columns

1 HIGHER PRESSURE RATINGS INCORPORATING GLASS CONSTRUCTION

Pressures to 80 Bars (1,160 psig)
Full view of bed unlike stainless steel
Rugged construction for hard lab use

2 LINEAR MOTION OF PISTON

Due to true linear motion of piston there is no torsional load imposed on the packed bed assuring true linear compression.

3 TRUE FRITS

True frit without the use of sock design employed in less expensive columns assure even flow distribution across the bed.

4 ROBUST INLET AND OUTLET CONNECTIONS

Inlet and outlet connections are made at the exterior of the column, which provide a more reliable and visible connection.

5 FINE THREAD ADJUSTMENT

Columns are provided with fine thread adjustment of piston to allow for precise control of piston placement.

6 DOUBLE PISTON ADJUSTMENT

Standard double ended adjustable piston provides flexibility of bed settings and adjustment for settling and packing flexibility.

7 QUICK RELEASE ENDS

Design features our unique quick-disconnect end fittings making column disassembly effortless.

8 PRECISION BORE GLASS TUBE

Minimize "wall effect" due to precise bore.

9 EASY TO INSTALL PACKING ADAPTER

Installs in 5 seconds; user friendly.

“Connectivity and compatibility”

Two of the most frequently asked questions about using ELS glass columns are:

Question 1:

What packing materials can I use in ELS glass columns?

Answer:

In theory you can use any packing material from any manufacturer of your choice!

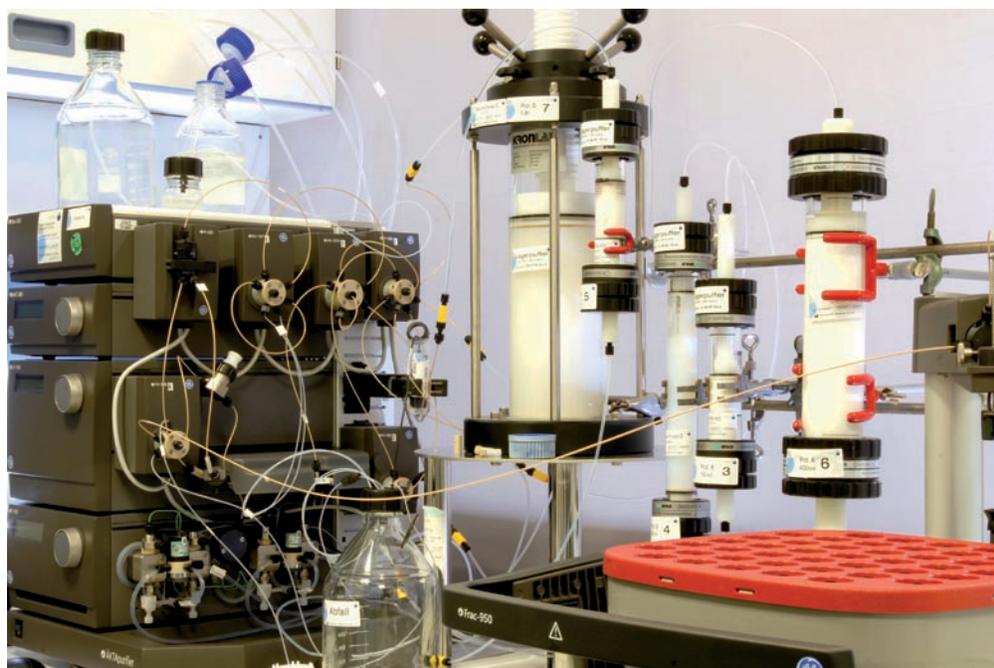
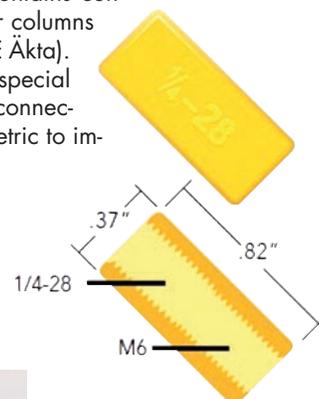
The only restrictions are those linked to the conditions of use with materials that come into contact with the media, such as the pressure limits of the column and packing material. To accommodate this, ELS offers a wide range of variants and different column versions. Our application laboratory has examples of applications in the fields of ion exchange, size exclusion, gel permeation, normal/reversed phase and affinity chromatography, etc. with an enormous range of phases from various manufacturers, including YMC, GE, Pall, Bio-Rad, Tosoh and others.

Question 2:

Can I link ELS glass columns to any LC system from other manufacturers, or can I only use ELS systems?

Answer:

Of course we would love you to use ELS glass columns as a “package” with ELS LC systems – but of course there are no restrictions! The accessory package included in ELS laboratory glass columns contains connectors and adaptors to link our columns to all current LC systems (e.g. GE Äkta). As an option, we can supply special components such as “yellow” connection adaptors to convert from metric to imperial systems (M6 at 1/4-28).

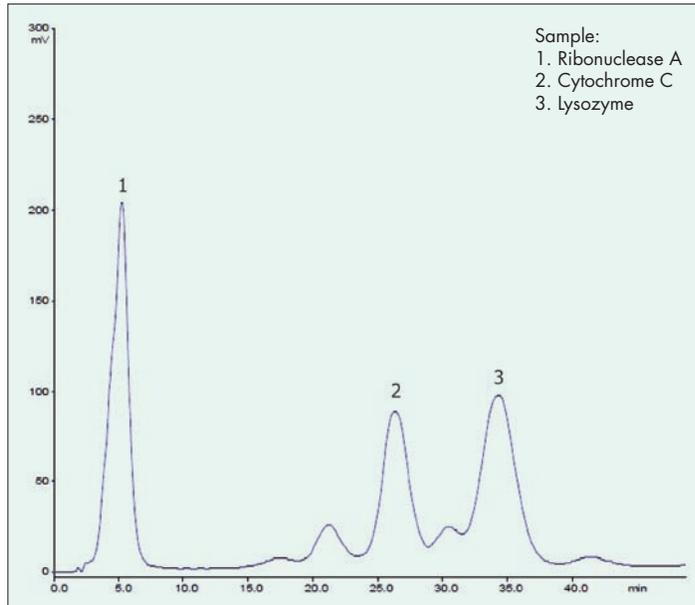


ELS laboratory glass columns in a “multi-purpose” application laboratory

Application Examples

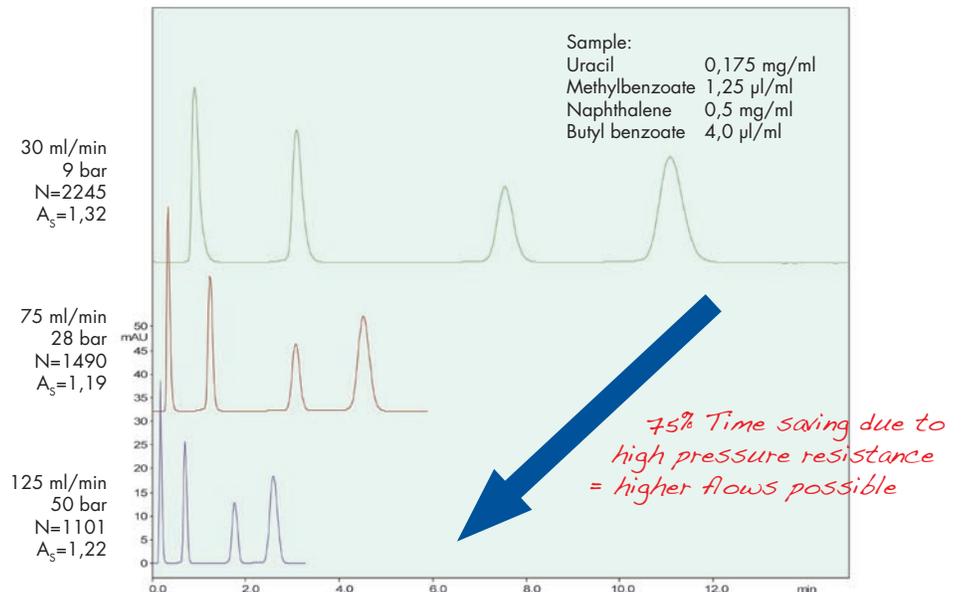
In reversed phase and adsorption chromatography, the possibilities for using glass columns are often limited due to high back pressures generated by small particles. The high pressure resistance of the Econoline® glass columns allow you to achieve high flow rates for demanding separations. The example shows that this enables a considerable acceleration of the separation, which means that you can achieve significant time savings.

Separation of a standard test mixture of proteins



Column: ELS Econoline® 250 x 15 mm ID
 Stationary phase: YMC-BioPro SP, 30 µm (bed length 170 mm)
 Mobile phase: A) 20 mM $\text{KH}_2\text{PO}_4 \cdot \text{K}_2\text{HPO}_4$ (pH 6.8)
 B) 20 mM $\text{KH}_2\text{PO}_4 \cdot \text{K}_2\text{HPO}_4$ (pH 6.8) containing 0.5 M NaCl
 Gradient: 40-80% B
 Flow rate: 6 ml/min
 Temperature: 25°C
 Detection: UV at 220 nm
 Injection: 100 µl

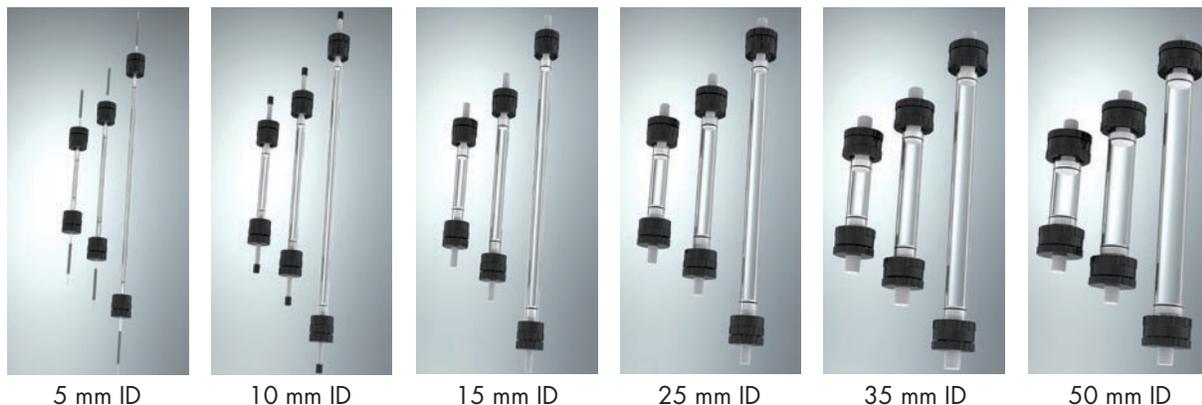
Example of application with reversed phase media



Column: ELS Econoline® 125 x 25 mm ID
 Stationary phase: YMC-Pack ODS-AQ, 10 µm, 12 nm, 8 cm bed length
 Flow rate: 30 ml/min - 75 ml/min - 125 ml/min
 Mobile phase: ACN/ H_2O (50:50)
 Injection: 500 µl
 Detection: UV at 254 nm

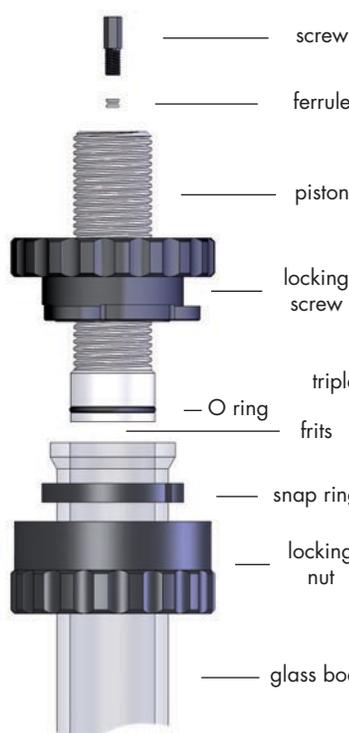
Product options

Econoline® laboratory glass columns are routinely available in three different lengths (125, 250, 500 mm) and three combinations of pistons (Short, Short/long, Long) in order to accommodate different volume configurations.

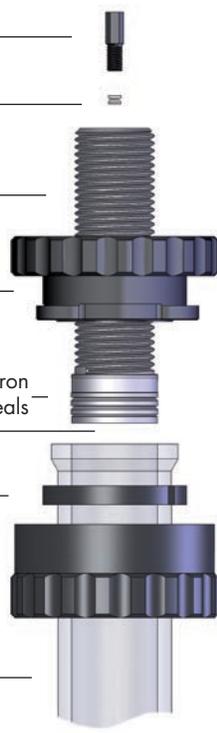


The modular construction allows for a range of piston variations to provide the ideal column volume.

Standard Version for aqueous buffers (AB)



Optional Version Solvent Resistant (SR)



Econoline® glass columns are multi-purpose columns for all liquid chromatography applications (with pressure limits of 30 to 80 bar (435 to 1160 psi) - depending on column diameter as shown in the table on page 6). Econoline® glass columns are available in two versions:

Standard-Version (AB = Aqueous Buffer) for aqueous buffers and applications in cold rooms.

Optional-Version (SR = Solvent Resistant) for normal and reversed phase chromatography.

The height-adjustable pistons (standard) at each end of the Econoline® glass column with Teflon ribs (SR-version) are suitable for the entire spectrum of normal phase and reversed phase chromatography as well as biochromatography above ambient temperature.

All Econoline® glass columns are made with high-precision CNC machines and undergo several rigorous quality controls before they are delivered.

Specifications

Aqueous buffer (AB) - version

Temperature range	4 - 40 °C
Plunger	PE (polyethylene)
Sealing	O-ring, EPDM (ethylene propylene diene monomer rubber)
Frit	PE (polyethylene)
Height adjustment	short plungers, short/long plunger, long plungers (see table)
Connections	1/4"-28G female screw thread

Solvent resistant (SR) - version

Temperature range	16 - 40 °C
Plunger	PTFE (polytetrafluoroethylene)
Sealing	PTFE triple chevrons
Frit	ID 5 - 15 mm: sintered glass ID 25 - 50 mm: stainless steel
Height adjustment	short plungers, short/long plunger, long plungers (see table)
Connections	1/4"-28G female screw thread

Bed length / Volume

ID [mm]	Pressure limit [bar]	short plungers		short/long plunger		long plungers	
		Bed length [mm]	Volume [ml]	Bed length [mm]	Volume [ml]	Bed length [mm]	Volume [ml]
5	AB = 80 SR = 80	22 - 125	0,4 - 2,5	0 - 125	0 - 2,5	0 - 125	0 - 2,5
		147 - 250	2,9 - 4,9	67 - 250	1,3 - 4,9	0 - 250	0 - 4,9
		397 - 500	7,8 - 9,8	317 - 500	6,2 - 9,8	237 - 500	4,7 - 9,8
10	AB = 80 SR = 50	32 - 125	2,5 - 9,8	0 - 125	0 - 9,8	0 - 125	0 - 9,8
		157 - 250	12 - 20	77 - 250	6,0 - 20	0 - 250	0 - 20
		407 - 500	32 - 39	327 - 500	26 - 39	247 - 500	19 - 39
15	AB = 70 SR = 50	24 - 125	4,2 - 22	0 - 125	0 - 22	0 - 125	0 - 22
		149 - 250	26 - 44	69 - 250	12 - 44	0 - 250	0 - 44
		399 - 500	71 - 88	319 - 500	56 - 88	239 - 500	42 - 88
25	AB = 50 SR = 50	28 - 125	14 - 61	0 - 125	0 - 61	0 - 125	0 - 61
		153 - 250	75 - 123	73 - 250	36 - 123	0 - 250	0 - 123
		403 - 500	198 - 245	323 - 500	159 - 245	243 - 500	119 - 245
35	AB = 40 SR = 40	30 - 125	29 - 120	0 - 125	0 - 120	0 - 125	0 - 120
		155 - 250	149 - 241	75 - 250	72 - 241	0 - 250	0 - 241
		405 - 500	390 - 481	325 - 500	313 - 481	245 - 500	236 - 481
50	AB = 30 SR = 25	36 - 125	71 - 245	0 - 125	0 - 245	0 - 125	0 - 245
		161 - 250	316 - 491	81 - 250	159 - 491	0 - 250	0 - 491
		410 - 500	805 - 982	331 - 500	650 - 982	250 - 500	491 - 982

Econoline® Series Glass Columns, AB-version, short/short plungers

Temperature range 4 - 40 °C
 Plunger PE (polyethylene)
 Sealing O-ring, EPDM
 Frit ID 5 - 50 mm: polyethylene (10 µm or 5 µm)
 Height adjustment short plungers



	Part No.	ID [mm]	Pressure limit [bar]	Bed length [mm]	Volume [ml]	Frit material	Frit porosity [µm]
5 mm ID	TAC05/125SSPE0-AB-2	5	80	22 - 125	0.4 - 2.5	polyethylene	10
	TAC05/250SSPE0-AB-2	5	80	147 - 250	2.9 - 4.9	polyethylene	10
	TAC05/500SSPE0-AB-2	5	80	397 - 500	7.8 - 9.8	polyethylene	10
	TAC05/125SSPE5-AB-2	5	80	22 - 125	0.4 - 2.5	polyethylene	5
	TAC05/250SSPE5-AB-2	5	80	147 - 250	2.9 - 4.9	polyethylene	5
	TAC05/500SSPE-AB-2	5	80	397 - 500	7.8 - 9.8	polyethylene	5
10 mm ID	TAC10/125SSPE0-AB-2	10	80	32 - 125	2.5 - 9.8	polyethylene	10
	TAC10/250SSPE0-AB-2	10	80	157 - 250	12 - 20	polyethylene	10
	TAC10/500SSPE0-AB-2	10	80	407 - 500	32 - 39	polyethylene	10
	TAC10/125SSPE5-AB-2	10	80	32 - 125	2.5 - 9.8	polyethylene	5
	TAC10/250SSPE5-AB-2	10	80	157 - 250	12 - 20	Polyethylene	5
	TAC10/500SSPE5-AB-2	10	80	407 - 500	32 - 39	Polyethylene	5
15 mm ID	TAC15/125SSPE0-AB-2	15	70	24 - 125	4.2 - 22	polyethylene	10
	TAC15/250SSPE0-AB-2	15	70	149 - 250	26 - 44	polyethylene	10
	TAC15/500SSPE0-AB-2	15	70	399 - 500	71 - 88	polyethylene	10
	TAC15/125SSPE5-AB-2	15	70	24 - 125	4.2 - 22	polyethylene	5
	TAC15/250SSPE5-AB-2	15	70	149 - 250	26 - 44	polyethylene	5
	TAC15/500SSPE5-AB-2	15	70	399 - 500	71 - 88	polyethylene	5
25 mm ID	TAC25/125SSPE0-AB-2	25	50	28 - 125	14 - 61	polyethylene	10
	TAC25/250SSPE0-AB-2	25	50	153 - 250	75 - 123	polyethylene	10
	TAC25/500SSPE0-AB-2	25	50	403 - 500	198 - 245	polyethylene	10
	TAC25/125SSPE5-AB-2	25	50	28 - 125	14 - 61	polyethylene	5
	TAC25/250SSPE5-AB-2	25	50	153 - 250	75 - 123	polyethylene	5
	TAC25/500SSPE5-AB-2	25	50	403 - 500	198 - 245	polyethylene	5
35 mm ID	TAC35/125SSPE0-AB-2	35	40	30 - 125	29 - 120	polyethylene	10
	TAC35/250SSPE0-AB-2	35	40	155 - 250	149 - 241	polyethylene	10
	TAC35/500SSPE0-AB-2	35	40	405 - 500	390 - 481	polyethylene	10
	TAC35/125SSPE5-AB-2	35	40	30 - 125	29 - 120	polyethylene	5
	TAC35/250SSPE5-AB-2	35	40	155 - 250	149 - 241	polyethylene	5
	TAC35/500SSPE5-AB-2	35	40	405 - 500	390 - 481	polyethylene	5
50 mm ID	TAC50/125SSPE0-AB-2	50	30	36 - 125	71 - 245	polyethylene	10
	TAC50/250SSPE0-AB-2	50	30	161 - 250	316 - 491	polyethylene	10
	TAC50/500SSPE0-AB-2	50	30	410 - 500	805 - 982	polyethylene	10
	TAC50/125SSPE5-AB-2	50	30	36 - 125	71 - 245	polyethylene	5
	TAC50/250SSPE5-AB-2	50	30	161 - 250	316 - 491	polyethylene	5
	TAC50/500SSPE5-AB-2	50	30	410 - 500	805 - 982	polyethylene	5

Econoline® Series Glass Columns, AB-version, short/long plunger

Temperature range 4 - 40 °C
 Plunger PE (polyethylene)
 Sealing O-ring, EPDM
 Frit ID 5 - 50 mm: polyethylene (10 µm or 5 µm)
 Height adjustment short / long plunger



	Part No.	ID [mm]	Pressure limit [bar]	Bed length [mm]	Volume [ml]	Frit material	Frit porosity [µm]
5 mm ID	TAC05/125SLPE0-AB-2	5	80	0 - 125	0 - 2.5	polyethylene	10
	TAC05/250SLPE0-AB-2	5	80	67 - 250	1.3 - 4.9	polyethylene	10
	TAC05/500SLPE0-AB-2	5	80	317 - 500	6.2 - 9.8	polyethylene	10
	TAC05/125SLPE5-AB-2	5	80	0 - 125	0 - 2.5	polyethylene	5
	TAC05/250SLPE5-AB-2	5	80	67 - 250	1.3 - 4.9	polyethylene	5
	TAC05/500SLPE5-AB-2	5	80	317 - 500	6.2 - 9.8	polyethylene	5
10 mm ID	TAC10/125SLPE0-AB-2	10	80	0 - 125	0 - 9.8	polyethylene	10
	TAC10/250SLPE0-AB-2	10	80	77 - 250	6.0 - 20	polyethylene	10
	TAC10/500SLPE0-AB-2	10	80	327 - 500	26 - 39	polyethylene	10
	TAC10/125SLPE5-AB-2	10	80	0 - 125	0 - 9.8	polyethylene	5
	TAC10/250SLPE5-AB-2	10	80	77 - 250	6.0 - 20	polyethylene	5
	TAC10/500SLPE5-AB-2	10	80	327 - 500	26 - 39	polyethylene	5
15 mm ID	TAC15/125SLPE0-AB-2	15	70	0 - 125	0 - 22	polyethylene	10
	TAC15/250SLPE0-AB-2	15	70	69 - 250	12 - 44	polyethylene	10
	TAC15/500SLPE0-AB-2	15	70	319 - 500	56 - 88	polyethylene	10
	TAC15/125SLPE5-AB-2	15	70	0 - 125	0 - 22	polyethylene	5
	TAC15/250SLPE5-AB-2	15	70	69 - 250	12 - 44	polyethylene	5
	TAC15/500SLPE5-AB-2	15	70	319 - 500	56 - 88	polyethylene	5
25 mm ID	TAC25/125SLPE0-AB-2	25	50	0 - 125	0 - 61	polyethylene	10
	TAC25/250SLPE0-AB-2	25	50	73 - 250	36 - 123	polyethylene	10
	TAC25/500SLPE0-AB-2	25	50	323 - 500	159 - 245	polyethylene	10
	TAC25/125SLPE5-AB-2	25	50	0 - 125	0 - 61	polyethylene	5
	TAC25/250SLPE5-AB-2	25	50	73 - 250	36 - 123	polyethylene	5
	TAC25/500SLPE5-AB-2	25	50	323 - 500	159 - 245	polyethylene	5
35 mm ID	TAC35/125SLPE0-AB-2	35	40	0 - 125	0 - 120	polyethylene	10
	TAC35/250SLPE0-AB-2	35	40	75 - 250	72 - 241	polyethylene	10
	TAC35/500SLPE0-AB-2	35	40	325 - 500	313 - 481	polyethylene	10
	TAC35/125SLPE5-AB-2	35	40	0 - 125	0 - 120	polyethylene	5
	TAC35/250SLPE5-AB-2	35	40	75 - 250	72 - 241	polyethylene	5
	TAC35/500SLPE5-AB-2	35	40	325 - 500	313 - 481	polyethylene	5
50 mm ID	TAC50/125SLPE0-AB-2	50	30	0 - 125	0 - 245	polyethylene	10
	TAC50/250SLPE0-AB-2	50	30	81 - 250	159 - 491	polyethylene	10
	TAC50/500SLPE0-AB-2	50	30	331 - 500	650 - 982	polyethylene	10
	TAC50/125SLPE5-AB-2	50	30	0 - 125	0 - 245	polyethylene	5
	TAC50/250SLPE5-AB-2	50	30	81 - 250	159 - 491	polyethylene	5
	TAC50/500SLPE5-AB-2	50	30	331 - 500	650 - 982	polyethylene	5

Econoline® Series Glass Columns, AB-version, long/long plungers

Temperature range	4 - 40 °C
Plunger	PE (polyethylene)
Sealing	O-ring, EPDM
Frit	ID 5 - 50 mm: polyethylene (10 µm or 5 µm)
Height adjustment	long plungers



	Part No.	ID [mm]	Pressure limit [bar]	Bed length [mm]	Volume [ml]	Frit material	Frit porosity [µm]
5 mm ID	TAC05/125LLPE0-AB-2	5	80	0 - 125	0 - 2.5	polyethylene	10
	TAC05/250LLPE0-AB-2	5	80	0 - 250	0 - 4.9	polyethylene	10
	TAC05/500LLPE0-AB-2	5	80	237 - 500	4.7 - 9.8	Polyethylen	10
	TAC05/125LLPE5-AB-2	5	80	0 - 125	0 - 2.5	polyethylene	5
	TAC05/250LLPE5-AB-2	5	80	0 - 250	0 - 4.9	polyethylene	5
	TAC05/500LLPE5-AB-2	5	80	237 - 500	4.7 - 9.8	polyethylene	5
10 mm ID	TAC10/z-AB-2	10	80	0 - 125	0 - 9.8	polyethylene	10
	TAC10/250LLPE0-AB-2	10	80	0 - 250	0 - 20	polyethylene	10
	TAC10/500LLPE0-AB-2	10	80	247 - 500	19 - 39	polyethylene	10
	TAC10/125LLPE5-AB-2	10	80	0 - 125	0 - 9.8	polyethylene	5
	TAC10/250LLPE5-AB-2	10	80	0 - 250	0 - 20	polyethylene	5
	TAC10/500LLPE5-AB-2	10	80	247 - 500	19 - 39	polyethylene	5
15 mm ID	TAC15/125LLPE0-AB-2	15	70	0 - 125	0 - 22	polyethylene	10
	TAC15/250LLPE0-AB-2	15	70	0 - 250	0 - 44	polyethylene	10
	TAC15/500LLPE0-AB-2	15	70	239 - 500	42 - 88	polyethylene	10
	TAC15/125LLPE5-AB-2	15	70	0 - 125	0 - 22	polyethylene	5
	TAC15/250LLPE5-AB-2	15	70	0 - 250	0 - 44	polyethylene	5
	TAC15/500LLPE5-AB-2	15	70	239 - 500	42 - 88	polyethylene	5
25 mm ID	TAC25/125LLPE0-AB-2	25	50	0 - 125	0 - 61	polyethylene	10
	TAC25/250LLPE0-AB-2	25	50	0 - 250	0 - 123	polyethylene	10
	TAC25/500LLPE0-AB-2	25	50	243 - 500	119 - 245	polyethylene	10
	TAC25/125LLPE5-AB-2	25	50	0 - 125	0 - 61	polyethylene	5
	TAC25/250LLPE5-AB-2	25	50	0 - 250	0 - 123	polyethylene	5
	TAC25/500LLPE5-AB-2	25	50	243 - 500	119 - 245	polyethylene	5
35 mm ID	TAC35/125LLPE0-AB-2	35	40	0 - 125	0 - 120	polyethylene	10
	TAC35/250LLPE0-AB-2	35	40	0 - 250	0 - 241	polyethylene	10
	TAC35/500LLPE0-AB-2	35	40	245 - 500	236 - 481	polyethylene	10
	TAC35/125LLPE5-AB-2	35	40	0 - 125	0 - 120	polyethylene	5
	TAC35/250LLPE5-AB-2	35	40	0 - 250	0 - 241	polyethylene	5
	TAC35/500LLPE5-AB-2	35	40	245 - 500	236 - 481	polyethylene	5
50 mm ID	TAC50/125LLPE0-AB-2	50	30	0 - 125	0 - 245	polyethylene	10
	TAC50/250LLPE0-AB-2	50	30	0 - 250	0 - 491	polyethylene	10
	TAC50/500LLPE0-AB-2	50	30	250 - 500	491 - 982	polyethylene	10
	TAC50/125LLPE5-AB-2	50	30	0 - 125	0 - 245	polyethylene	5
	TAC50/250LLPE5-AB-2	50	30	0 - 250	0 - 491	polyethylene	5
	TAC50/500LLPE5-AB-2	50	30	250 - 500	491 - 982	polyethylene	5

Econoline® Series Glass Columns, SR-version, short/short plungers

Temperature range 16 - 40 °C
 Plunger PTFE
 Sealing PTFE triple chevrons
 Frit ID 5 - 15 mm: sintered glass (10 µm or 2 µm)
 ID 25 - 50 mm: stainless steel (10 µm or 2 µm)
 Height adjustment short plungers



	Part No.	ID [mm]	Pressure limit [bar]	Bed length [mm]	Volume [ml]	Frit material	Frit porosity [µm]
5 mm ID	TAC05/125SSG0-SR-3	5	80	22 - 125	0.4 - 2.5	sintered glass	10
	TAC05/250SSG0-SR-3	5	80	147 - 250	2.9 - 4.9	sintered glass	10
	TAC05/500SSG0-SR-3	5	80	397 - 500	7.8 - 9.8	sintered glass	10
	TAC05/125SSG2-SR-3	5	80	22 - 125	0.4 - 2.5	sintered glass	2
	TAC05/250SSG2-SR-3	5	80	147 - 250	2.9 - 4.9	sintered glass	2
	TAC05/500SSG2-SR-3	5	80	397 - 500	7.8 - 9.8	sintered glass	2
10 mm ID	TAC10/125SSG0-SR-3	10	50	32 - 125	2.5 - 9.8	sintered glass	10
	TAC10/250SSG0-SR-3	10	50	157 - 250	12 - 20	sintered glass	10
	TAC10/500SSG0-SR-3	10	50	407 - 500	32 - 39	sintered glass	10
	TAC10/125SSG2-SR-3	10	50	32 - 125	2.5 - 9.8	sintered glass	2
	TAC10/250SSG2-SR-3	10	50	157 - 250	12 - 20	sintered glass	2
	TAC10/500SSG2-SR-3	10	50	407 - 500	32 - 39	sintered glass	2
15 mm ID	TAC15/125SSG0-SR-3	15	50	24 - 125	4.2 - 22	sintered glass	10
	TAC15/250SSG0-SR-3	15	50	149 - 250	26 - 44	sintered glass	10
	TAC15/500SSG0-SR-3	15	50	399 - 500	71 - 88	sintered glass	10
	TAC15/125SSG2-SR-3	15	50	24 - 125	4.2 - 22	sintered glass	2
	TAC15/250SSG2-SR-3	15	50	149 - 250	26 - 44	sintered glass	2
	TAC15/500SSG2-SR-3	15	50	399 - 500	71 - 88	sintered glass	2
25 mm ID	TAC25/125SSS0-SR-3	25	50	28 - 125	14 - 61	stainless steel	10
	TAC25/250SSS0-SR-3	25	50	153 - 250	75 - 123	stainless steel	10
	TAC25/500SSS0-SR-3	25	50	403 - 500	198 - 245	stainless steel	10
	TAC25/125SSS2-SR-3	25	50	28 - 125	14 - 61	stainless steel	2
	TAC25/250SSS2-SR-3	25	50	153 - 250	75 - 123	stainless steel	2
	TAC25/500SSS2-SR-3	25	50	403 - 500	198 - 245	stainless steel	2
35 mm ID	TAC35/125SSS0-SR-3	35	40	30 - 125	29 - 120	stainless steel	10
	TAC35/250SSS0-SR-3	35	40	155 - 250	149 - 241	stainless steel	10
	TAC35/500SSS0-SR-3	35	40	405 - 500	390 - 481	stainless steel	10
	TAC35/125SSS2-SR-3	35	40	30 - 125	29 - 120	stainless steel	2
	TAC35/250SSS2-SR-3	35	40	155 - 250	149 - 241	stainless steel	2
	TAC35/500SSS2-SR-3	35	40	405 - 500	390 - 481	stainless steel	2
50 mm ID	TAC50/125SSS0-SR-3	50	25	36 - 125	71 - 245	stainless steel	10
	TAC50/250SSS0-SR-3	50	25	161 - 250	316 - 491	stainless steel	10
	TAC50/500SSS0-SR-3	50	25	410 - 500	805 - 982	stainless steel	10
	TAC50/125SSS2-SR-3	50	25	36 - 125	71 - 245	stainless steel	2
	TAC50/250SSS2-SR-3	50	25	161 - 250	316 - 491	stainless steel	2
	TAC50/500SSS2-SR-3	50	25	410 - 500	805 - 982	stainless steel	2

Econoline® Series Glass Columns, SR-version, short/long plunger

Temperature range 16 - 40 °C
 Plunger PTFE
 Sealing PTFE triple chevrons
 Frit ID 5 - 15 mm: sintered glass (10 µm or 2 µm)
 ID 25 - 50 mm: stainless steel (10 µm or 2 µm)
 Height adjustment short / long plunger



	Part No.	ID [mm]	Pressure limit [bar]	Bed length [mm]	Volume [ml]	Frit material	Frit porosity [µm]
5 mm ID	TAC05/125SLG0-SR-3	5	80	0 - 125	0 - 2.5	sintered glass	10
	TAC05/250SLG0-SR-3	5	80	67 - 250	1.3 - 4.9	sintered glass	10
	TAC05/500SLG0-SR-3	5	80	317 - 500	6.2 - 9.8	sintered glass	10
	TAC05/125SLG2-SR-3	5	80	0 - 125	0 - 2.5	sintered glass	2
	TAC05/250SLG2-SR-3	5	80	67 - 250	1.3 - 4.9	sintered glass	2
	TAC05/500SLG2-SR-3	5	80	317 - 500	6.2 - 9.8	sintered glass	2
10 mm ID	TAC10/125SLG0-SR-3	10	50	0 - 125	0 - 9.8	sintered glass	10
	TAC10/250SLG0-SR-3	10	50	77 - 250	6.0 - 20	sintered glass	10
	TAC10/500SLG0-SR-3	10	50	327 - 500	26 - 39	sintered glass	10
	TAC10/125SLG2-SR-3	10	50	0 - 125	0 - 9.8	sintered glass	2
	TAC10/250SLG2-SR-3	10	50	77 - 250	6.0 - 20	sintered glass	2
	TAC10/500SLG2-SR-3	10	50	327 - 500	26 - 39	sintered glass	2
15 mm ID	TAC15/125SLG0-SR-3	15	50	0 - 125	0 - 22	sintered glass	10
	TAC15/250SLG0-SR-3	15	50	69 - 250	12 - 44	sintered glass	10
	TAC15/500SLG0-SR-3	15	50	319 - 500	56 - 88	sintered glass	10
	TAC15/125SLG2-SR-3	15	50	0 - 125	0 - 22	sintered glass	2
	TAC15/250SLG2-SR-3	15	50	69 - 250	12 - 44	sintered glass	2
	TAC15/500SLG2-SR-3	15	50	319 - 500	56 - 88	sintered glass	2
25 mm ID	TAC25/125SLS0-SR-3	25	50	0 - 125	0 - 61	stainless steel	10
	TAC25/250SLS0-SR-3	25	50	73 - 250	36 - 123	stainless steel	10
	TAC25/500SLS0-SR-3	25	50	323 - 500	159 - 245	stainless steel	10
	TAC25/125SLS2-SR-3	25	50	0 - 125	0 - 61	stainless steel	2
	TAC25/250SLS2-SR-3	25	50	73 - 250	36 - 123	stainless steel	2
	TAC25/500SLS2-SR-3	25	50	323 - 500	159 - 245	stainless steel	2
35 mm ID	TAC35/125SLS0-SR-3	35	40	0 - 125	0 - 120	stainless steel	10
	TAC35/250SLS0-SR-3	35	40	75 - 250	72 - 241	stainless steel	10
	TAC35/500SLS0-SR-3	35	40	325 - 500	313 - 481	stainless steel	10
	TAC35/125SLS2-SR-3	35	40	0 - 125	0 - 120	stainless steel	2
	TAC35/250SLS2-SR-3	35	40	75 - 250	72 - 241	stainless steel	2
	TAC35/500SLS2-SR-3	35	40	325 - 500	313 - 481	stainless steel	2
50 mm ID	TAC50/125SLS0-SR-3	50	25	0 - 125	0 - 245	stainless steel	10
	TAC50/250SLS0-SR-3	50	25	81 - 250	159 - 491	stainless steel	10
	TAC50/500SLS0-SR-3	50	25	331 - 500	650 - 982	stainless steel	10
	TAC50/125SLS2-SR-3	50	25	0 - 125	0 - 245	stainless steel	2
	TAC50/250SLS2-SR-3	50	25	81 - 250	159 - 491	stainless steel	2
	TAC50/500SLS2-SR-3	50	25	331 - 500	650 - 982	stainless steel	2

Econoline® Series Glass Columns, SR-version, long/long plungers

Temperature range 16 - 40 °C
 Plunger PTFE
 Sealing PTFE triple chevrons
 Frit ID 5 - 15 mm: sintered glass (10 µm or 2 µm)
 ID 25 - 50 mm: stainless steel (10 µm or 2 µm)
 Height adjustment long plungers



	Part No.	ID [mm]	Pressure limit [bar]	Bed length [mm]	Volume [ml]	Frit material	Frit porosity [µm]
5 mm ID	TAC05/125LLG0-SR-3	5	80	0 - 125	0 - 2.5	sintered glass	10
	TAC05/250LLG0-SR-3	5	80	0 - 250	0 - 4.9	sintered glass	10
	TAC05/500LLG0-SR-3	5	80	237 - 500	4.7 - 9.8	sintered glass	10
	TAC05/125LLG2-SR-3	5	80	0 - 125	0 - 2.5	sintered glass	2
	TAC05/250LLG2-SR-3	5	80	0 - 250	0 - 4.9	sintered glass	2
	TAC05/500LLG2-SR-3	5	80	237 - 500	4.7 - 9.8	sintered glass	2
10 mm ID	TAC10/125LLG0-SR-3	10	50	0 - 125	0 - 9.8	sintered glass	10
	TAC10/250LLG0-SR-3	10	50	0 - 250	0 - 20	sintered glass	10
	TAC10/500LLG0-SR-3	10	50	247 - 500	19 - 39	sintered glass	10
	TAC10/125LLG2-SR-3	10	50	0 - 125	0 - 9.8	sintered glass	2
	TAC10/250LLG2-SR-3	10	50	0 - 250	0 - 20	sintered glass	2
	TAC10/500LLG2-SR-3	10	50	247 - 500	19 - 39	sintered glass	2
15 mm ID	TAC15/125LLG0-SR-3	15	50	0 - 125	0 - 22	sintered glass	10
	TAC15/250LLG0-SR-3	15	50	0 - 250	0 - 44	sintered glass	10
	TAC15/500LLG0-SR-3	15	50	239 - 500	42 - 88	sintered glass	10
	TAC15/125LLG2-SR-3	15	50	0 - 125	0 - 22	sintered glass	2
	TAC15/250LLG2-SR-3	15	50	0 - 250	0 - 44	sintered glass	2
	TAC15/500LLG2-SR-3	15	50	239 - 500	42 - 88	sintered glass	2
25 mm ID	TAC25/125LLS0-SR-3	25	50	0 - 125	0 - 61	stainless steel	10
	TAC25/250LLS0-SR-3	25	50	0 - 250	0 - 123	stainless steel	10
	TAC25/500LLS0-SR-3	25	50	243 - 500	119 - 245	stainless steel	10
	TAC25/125LLS2-SR-3	25	50	0 - 125	0 - 61	stainless steel	2
	TAC25/250LLS2-SR-3	25	50	0 - 250	0 - 123	stainless steel	2
	TAC25/500LLS2-SR-3	25	50	243 - 500	119 - 245	stainless steel	2
35 mm ID	TAC35/125LLS0-SR-3	35	40	0 - 125	0 - 120	stainless steel	10
	TAC35/250LLS0-SR-3	35	40	0 - 250	0 - 241	stainless steel	10
	TAC35/500LLS0-SR-3	35	40	245 - 500	236 - 481	stainless steel	10
	TAC35/125LLS2-SR-3	35	40	0 - 125	0 - 120	stainless steel	2
	TAC35/250LLS2-SR-3	35	40	0 - 250	0 - 241	stainless steel	2
	TAC35/500LLS2-SR-3	35	40	245 - 500	236 - 481	stainless steel	2
50 mm ID	TAC50/125LLS0-SR-3	50	25	0 - 125	0 - 245	stainless steel	10
	TAC50/250LLS0-SR-3	50	25	0 - 250	0 - 491	stainless steel	10
	TAC50/500LLS0-SR-3	50	25	250 - 500	491 - 982	stainless steel	10
	TAC50/125LLS2-SR-3	50	25	0 - 125	0 - 245	stainless steel	2
	TAC50/250LLS2-SR-3	50	25	0 - 250	0 - 491	stainless steel	2
	TAC50/500LLS2-SR-3	50	25	250 - 500	491 - 982	stainless steel	2

Columns supplied with:

for ID 5 mm:

1x 1 m Tefzel tubing 1/16". pre-attached
4x 1/4"-28G nut and ferrule for 1/16" tubing
2x M6 nut and ferrule for 1/16" tubing
2x 10-32 nut/ferrule for 1/16" tubing
2x plugs, PTFE (1/4"-28G)

for ID 10 - 15 mm:

1x 1 m 1/16" FEP tubing (0.8 x 1.6 mm)
4x 1/4"-28G nut and ferrule for 1/16" tubing
2x M6 nut and ferrule for 1/16" tubing
2x 10-32 nut/ferrule for 1/16" tubing
1x frit removal tool
2x plugs, PTFE (1/4"-28G)

for ID 25 - 50 mm:

1x 1 m 1/8" FEP tubing (1.6 x 3.2 mm)
4x 1/4"-28G nut and 4x ferrule for 1/8" tubing
2x M6 nut and ferrule for 1/8" tubing
1x frit removal tool
2x plugs, PTFE (1/4"-28G)

Tubing should be connected to the Econoline® Glass Columns with following screws:

for tubing with 1/16" outer diameter:

ELS-R-55050

Nut 1/4"-28 G

ELS-JR-CFL-CB1KF-S

Ferrule, collapsible 1/16"



for tubing with 1/8" outer diameter:

ELS-JR-55051

Nut 1/4"-28 G

ELS-JR-CFL-CB2KF-S

Ferrule, collapsible 1/8"



IMPORTANT!

2 Screws with metric threads are also supplied with the accessories packages (ELS-K.P207 / ELS-K.P200N oder ELS-K.P307 / ELS-K.P300N). These screws are not suitable for connection to the glass columns as they will damage the thread in the pistons! They are to allow the columns to be connected to pumps, etc. fitted with metric threads.

Packing Adapters for Econoline® Glass Columns

These consist of a coupling unit and glass body of same column ID as column to be packed

Coupling units consisting of:

- Econoline® coupling unit assembly with PTFE insert
- Counter screw (thread) with retaining ring
- Counter screw (bayonet) with retaining ring
- AB-version with two sets (4 pieces) Viton O-rings
- SR-version with two Kalrez® O-rings



Packing Adapters AB-version

Part No.	for column ID [mm]
PAK05/125-AB	5
PAK05/250-AB	5
PAK05/500-AB	5
PAK10/125-AB	10
PAK10/250-AB	10
PAK10/500-AB	10
PAK15/125-AB	15
PAK15/250-AB	15
PAK15/500-AB	15
PAK25/125-AB	25
PAK25/250-AB	25
PAK25/500-AB	25
PAK35/125-AB	35
PAK35/250-AB	35
PAK35/500-AB	35
PAK50/125-AB	50
PAK50/250-AB	50
PAK50/500-AB	50

Packing Adapters SR-version

Part No.	for column ID [mm]
PAK05/125-SR	5
PAK05/250-SR	5
PAK05/500-SR	5
PAK10/125-SR	10
PAK10/250-SR	10
PAK10/500-SR	10
PAK15/125-SR	15
PAK15/250-SR	15
PAK15/500-SR	15
PAK25/125-SR	25
PAK25/250-SR	25
PAK25/500-SR	25
PAK35/125-SR	35
PAK35/250-SR	35
PAK35/500-SR	35
PAK50/125-SR	50
PAK50/250-SR	50
PAK50/500-SR	50

Coupling units AB-version

Part No.	for column ID [mm]
TAC05KU-AB	5
TAC10KU-AB	10
TAC15KU-AB	15
TAC25KU-AB	25
TAC35KU-AB	35
TAC50KU-AB	50

Coupling units SR-version

Part No.	for column ID [mm]
TAC05KU-SR	5
TAC10KU-SR	10
TAC15KU-SR	15
TAC25KU-SR	25
TAC35KU-SR	35
TAC50KU-SR	50

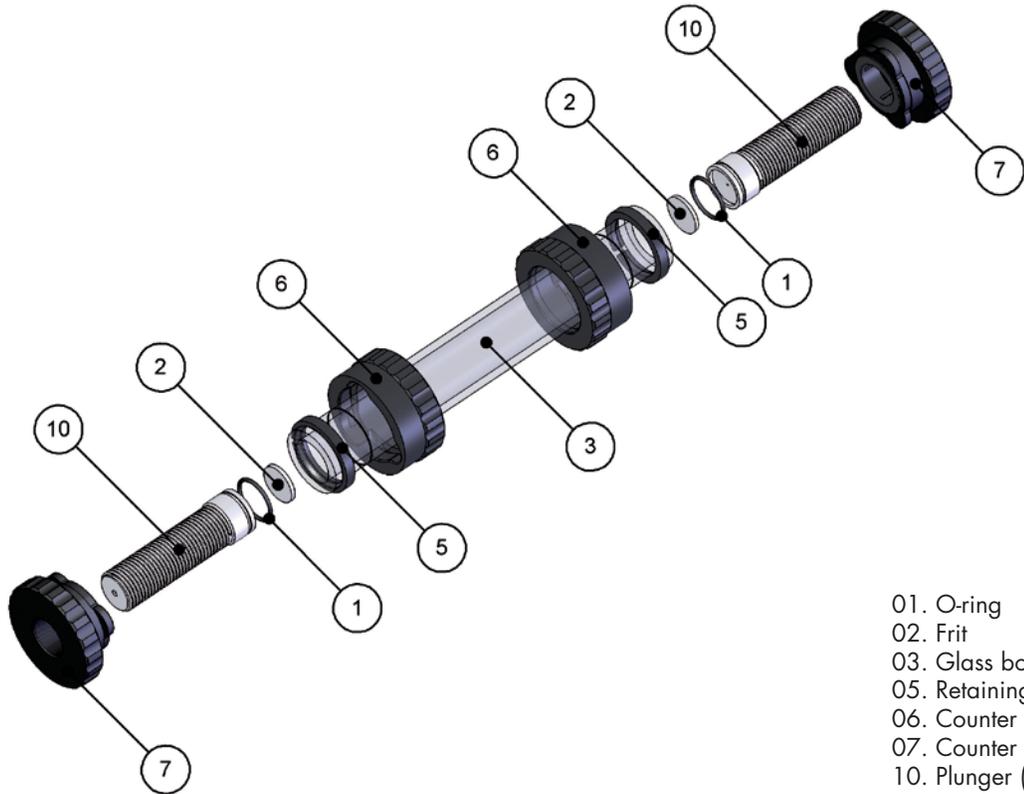
O-ring (Viton) for coupling units AB-version, pack of 2

Part No.	for column ID [mm]
TAC05KU03V/P2	5
TAC10KU03V/P2	10
TAC15KU03V/P2	15
TAC25KU03V/P2	25
TAC35KU03V/P2	35
TAC50KU03V/P2	50

O-ring (Kalrez®) for coupling units SR-version, pack of 2

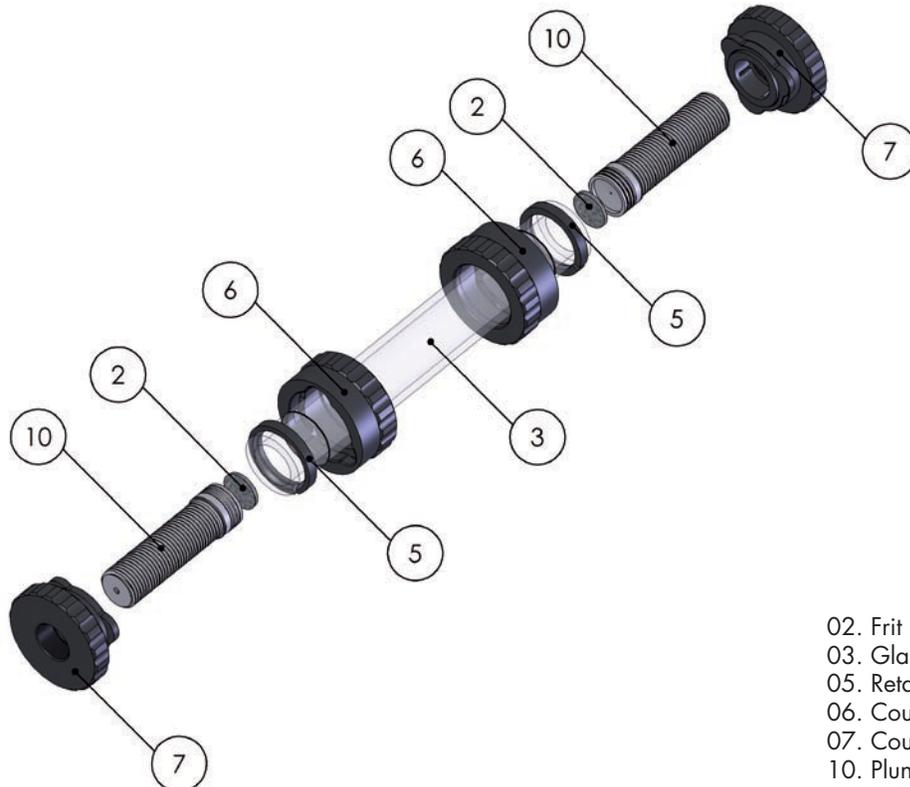
Part No.	for column ID [mm]
TAC05KU03K/P2	5
TAC10KU03K/P2	10
TAC15KU03K/P2	15
TAC25KU03K/P2	25
TAC35KU03K/P2	35
TAC50KU03K/P2	50

Econoline® AB-version



- 01. O-ring
- 02. Frit
- 03. Glass body
- 05. Retaining ring
- 06. Counter nut
- 07. Counter screw
- 10. Plunger (PE)

Econoline® SR-version



- 02. Frit
- 03. Glass body
- 05. Retaining ring
- 06. Counter nut
- 07. Counter screw
- 10. Plunger (PTFE)

Spare parts for Econoline® Series Glass Columns

Econoline® glass bodies

Part No.	ID [mm]	max. bed length [mm]
TAC05/125-2	5	125
TAC05/250-2	5	250
TAC05/500-2	5	500
TAC10/125-2	10	125
TAC10/250-2	10	250
TAC10/500-2	10	500
TAC15/125-2	15	125
TAC15/250-2	15	250
TAC15/500-2	15	500
TAC25/125-2	25	125
TAC25/250-2	25	250
TAC25/500-2	25	500
TAC35/125-2	35	125
TAC35/250-2	35	250
TAC35/500-2	35	500
TAC50/125-2	50	125
TAC50/250-2	50	250
TAC50/500-2	50	500

Econoline® column sealing O-ring, EPDM, for AB-version, pack of 2

Part No.	ID [mm]
TAC05/04E/P2	5
TAC10/04E/P2	10
TAC15/04E/P2	15
TAC25/04E/P2	25
TAC35/04E/P2	35
TAC50/04E/P2	50

Plungers, polyethylene, for AB-version (incl. O-ring, w/o frit)

Part No.	for column ID [mm]	adj. bed length [mm]
Short		
TAC05/03STS-AB-2	5	
TAC10/03STS-AB-2	10	
TAC15/03STS-AB-2	15	see table page 3
TAC25/03STS-AB-2	25	
TAC35/03STS-AB-2	35	
TAC50/03STS-AB-2	50	
Long		
TAC05/03STL-AB-2	5	
TAC10/03STL-AB-2	10	
TAC15/03STL-AB-2	15	see table page 3
TAC25/03STL-AB-2	25	
TAC35/03STL-AB-2	35	
TAC50/03STL-AB-2	50	

Plungers, PTFE, for SR-version (w/o frit)

Part No.	for column ID [mm]	adj. bed length [mm]
Short		
TAC05/03STS-3	5	
TAC10/03STS-3	10	
TAC15/03STS-3	15	see table page 3
TAC25/03STS-3	25	
TAC35/03STS-3	35	
TAC50/03STS-3	50	
Long		
TAC05/03STL-3	5	
TAC10/03STL-3	10	
TAC15/03STL-3	15	see table page 3
TAC25/03STL-3	25	
TAC35/03STL-3	35	
TAC50/03STL-3	50	

Spare parts for Econoline® Series Glass Columns

Frits, pack of 2

Part No.	for column ID [mm]	Porosity [µm]	Part No.	for column ID [mm]	Porosity [µm]
Polyethylene			Sintered glass		
TAC05PE10/P2	5	10	TAC05G10/P2	5	10
TAC05PE5/P2	5	5	TAC05G2/P2	5	2
TAC10PE10-2/P2	10	10	TAC10G10-2/P2	10	10
TAC10PE5-2/P2	10	5	TAC10G2-2/P2	10	2
TAC15PE10-2/P2	15	10	TAC15G10-2/P2	15	10
TAC15PE5-2/P2	15	5	TAC15G2-2/P2	15	2
TAC25PE10-2/P2	25	10	Stainless steel		
TAC25PE5-2/P2	25	5	TAC25S10-2/P2	25	10
TAC35PE10-2/P2	35	10	TAC25S2-2/P2	25	2
TAC35PE5-2/P2	35	5	TAC35S10-2/P2	35	10
TAC50PE10-2/P2	50	10	TAC35S2-2/P2	35	2
TAC50PE5-2/P2	50	5	TAC50S10-2/P2	50	10
			TAC50S2-2/P2	50	2

Additional spare parts

Part No.	Description
ELS-FRT	Frit removal tool
ELS-K.P316-5	Plug PTFE (1/4"-28G), pack of 5
ELS-K.P620-5	Female connector (both ends threaded 1/4"-28G), pack of 5
ELS-K.P621-5	Adaptor 1/4"-28G to M6, pack of 5
ELS-K.P627	Adaptor 10-32 to 1/4"-28G (incl. 1 F-300 fitting for 1/16" tubing)

Tubing

Part No.	Description
ELS-PT0.8FE1.6/M5	FEP tubing, 0.8 x 1.6 mm OD (1/16" OD), pack of 5 metres
ELS-PT1.6FE3.2/M5	FEP tubing, 1.6 x 3.2 mm OD (1/8" OD), pack of 5 metres
ELS-JR-T082-M3	Tefzel tubing, 0.5 x 1.6 mm OD (1/16" OD), pack of 3 metres

Spare parts for Econoline® Series Glass Columns

Fittings (nuts and ferrules)

Part No.	Description [€]
ELS-JR-55050-10	Nut, 1/4"-28, PPS, for collapsible ferrule for 1/16" tubing, pack of 10
ELS-JR-CFL-CB1KF	Ferrule, collapsible, for 1/16" tubing, pack of 10
ELS-K.P201X	Nut 1/4"-28G for 1/16" tubing, pack of 10
ELS-K.P200NX	Flangeless ferrule for 1/16" tubing, pack of 10
ELS-K.P207X	M6 nut for 1/16" tubing, pack of 10
ELS-K.P200NX	Flangeless ferrule for 1/16" tubing, pack of 10
ELS-JR-55051-10	FNut, 1/4"-28, PPS, for collapsible ferrule for 1/8" tubing, pack of 10
ELS-JR-CFL-CB2KF-10	Ferrule, collapsible, for 1/8" tubing, pack of 10
ELS-K.P301X	Nut 1/4"-28G for 1/8" tubing, pack of 10
ELS-K.P300NX	Ferrule for 1/8" tubing, pack of 10
ELS-K.P307X	M6 nut, for 1/8" tubing, pack of 10
ELS-K.P300NX	Ferrule for 1/8" tubing, pack of 10

Part No.	Description
ELS-JR-58000-5	10-32 nut/ferrule (one-piece-fitting) for 1/16" tubing (pack of 5)

Additional spare parts are available at request.

EconolineLP[®] Columns

Low Pressure, Low Price



HIGHLIGHTS:

- Biocompatible
- Universal Application
- Height Adjustment Plunger at One End
- Ease of Use
- Jacketed Version Available

Advantages of EconolineLP[®] Columns

1 LINEAR MOTION OF PISTON

Due to true linear motion of piston there is no torsional load imposed on the packed bed assuring true linear compression.

2 TRUE FRITS

True frit without the use of sock design employed in less expensive columns assure even flow distribution across the bed.

3 ROBUST INLET AND OUTLET CONNECTIONS

Inlet and outlet connections are made at the exterior of the column, which provide a more reliable and visible connection.

4 FINE THREAD ADJUSTMENT

Columns are provided with fine thread adjustment of piston to allow for precise control of piston placement.

5 EASY OPEN ENDS

Design features our unique easily removable threaded end fittings making column disassembly effortless.

6 SEAL ADJUSTMENT

Easily adjustable O-ring seals.

7 PACKING ADAPTER

User-friendly packing adapters available.

Pressure Limits:
10 - 30 Bars

Connections:
ID 10mm - 25mm
Two (2) 1/4"-28 fittings
for 1/16" capillaries

ID 32mm - 50 mm
Two (2) 1/4"-28 fittings
for 1/8" capillaries

Height Adjustment:
Multi-variable plunger
at one end, 120 mm
adjustment. Double
piston configuration
available upon request.

Accessories:
User-friendly
packing adapters

EconolineLP[®] Columns

MATERIALS OF CONSTRUCTION

- Tube: Borosilicate Glass
- Temperature Range: 4° - 40° C
- Plunger: POM (Delrin[®])
- Seal: Viton O-ring
- Frit: Porous Glass

INCLUDED SPARE PARTS

I.D. 10-25mm:

- 2 pcs. Nut 1/16"
- 2 pcs. Ferrule 1/16"
- 0.5mm FEP-Tubing I.D. 0.8mm, O.D. 1.6mm
- 1 pc. frit removal tool

I.D. 32-50mm:

- 2 pcs. Nut 1/8"
- 2 pcs. Ferrule 1/8"
- 0.5mm FEP-Tubing I.D. 1.6mm, O.D. 3.2 mm
- 1 pc. frit removal tool

Econoline^{LP}® Columns

Econoline^{LP}® Column
with piston removed.



ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (µm)	ELS Part No
10	0-120	0-9.42	30	16-40	ECO10/120V3V
10	80-200	6.28-15.71	30	16-40	ECO10/200V3V
10	330-450	25.92-35.34	30	16-40	ECO10/450V3V
10	630-750	49.48-58.90	30	16-40	ECO10/750V3V
10	880-1000	69.11-78.54	30	16-40	ECO10/999V3V
10	0-120	0-9.42	30	40-100	ECO10/120V4V
10	80-200	6.28-15.71	30	40-100	ECO10/200V4V
10	330-450	25.92-35.34	30	40-100	ECO10/450V4V
10	630-750	49.48-58.90	30	40-100	ECO10/750V4V
10	880-1000	69.11-78.54	30	40-100	ECO10/999V4V
15	0-120	0-21.21	25	16-40	ECO15/120V3V
15	80-200	14.14-35.34	25	16-40	ECO15/200V3V
15	330-450	58.32-79.52	25	16-40	ECO15/450V3V
15	630-750	111.33-132.54	25	16-40	ECO15/750V3V
15	880-1000	155.51-176.71	25	16-40	ECO15/999V3V
15	0-120	0-21.21	25	40-100	ECO15/120V4V
15	80-200	14.14-35.34	25	40-100	ECO15/200V4V
15	330-450	58.32-79.52	25	40-100	ECO15/450V4V
15	630-750	111.33-132.54	25	40-100	ECO15/750V4V
15	880-1000	155.51-176.71	25	40-100	ECO15/999V4V
20	0-120	0-37.70	20	16-40	ECO20/120V3V
20	80-200	25.13-62.83	20	16-40	ECO20/200V3V
20	330-450	103.67-141.37	20	16-40	ECO20/450V3V
20	630-750	197.92-235.62	20	16-40	ECO20/750V3V
20	880-1000	276.46-314.16	20	16-40	ECO20/999V3V
20	0-120	0-37.70	20	40-100	ECO20/120V4V
20	80-200	25.13-62.83	20	40-100	ECO20/200V4V
20	330-450	103.67-141.37	20	40-100	ECO20/450V4V
20	630-750	197.92-235.62	20	40-100	ECO20/750V4V
20	880-1000	276.46-314.16	20	40-100	ECO20/999V4V

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Glass Tempering **Jacket** / Double **Piston** Configuration

User-friendly
**PACKING
 ADAPTER**
 Available



ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (μ m)	ELS Part No
25	0-120	0-58.90	15	16-40	ECO25/120M3V-K
25	0-200	0-98.17	15	16-40	ECO25/200M3V-K
25	210-450	103.08-220.89	15	16-40	ECO25/450M3V-K
25	510-750	250.35-368.16	15	16-40	ECO25/750M3V-K
25	760-1000	373.06-490.87	15	16-40	ECO25/999M3V-K
25	0-120	0-58.90	15	40-100	ECO25/120M4V-K
25	0-200	0-98.17	15	40-100	ECO25/200M4V-K
25	210-450	103.08-220.89	15	40-100	ECO25/450M4V-K
25	510-750	250.35-368.16	15	40-100	ECO25/750M4V-K
25	760-1000	373.06-490.87	15	40-100	ECO25/999M4V-K
32	0-120	0-96.51	10	16-40	ECO32/120M3V-K
32	0-200	0-160.85	10	16-40	ECO32/200M3V-K
32	210-450	168.89-361.91	10	16-40	ECO32/450M3V-K
32	510-750	410.17-603.19	10	16-40	ECO32/750M3V-K
32	760-1000	611.23-804.25	10	16-40	ECO32/999M3V-K
32	0-120	0-96.51	10	40-100	ECO32/120M4V-K
32	0-200	0-160.85	10	40-100	ECO32/200M4V-K
32	210-450	168.89-361.91	10	40-100	ECO32/450M4V-K
32	510-750	410.17-603.19	10	40-100	ECO32/750M4V-K
32	760-1000	611.23-804.25	10	40-100	ECO32/999M4V-K
50	0-120	0-235.62	10	16-40	ECO50/120M3V-K
50	0-200	0-392.70	10	16-40	ECO50/200M3V-K
50	210-450	412.33-883.57	10	16-40	ECO50/450M3V-K
50	510-750	1001.38-1472.62	10	16-40	ECO50/750M3V-K
50	760-1000	1492.26-1963.49	10	16-40	ECO50/999M3V-K
50	0-120	0-235.62	10	40-100	ECO50/120M4V-K
50	0-200	0-392.70	10	40-100	ECO50/200M4V-K
50	210-450	412.33-883.57	10	40-100	ECO50/450M4V-K
50	510-750	1001.38-1472.62	10	40-100	ECO50/750M4V-K
50	760-1000	1001.38-1472.62	10	40-100	ECO50/999M4V-K

Glass Tempering **Jacket** / Double **Piston** Configuration

Double Piston
Econoline^{LP}® **Column** with
Glass Tempering Jacket.



ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (μ m)	ELS Part No
10	0-120	0-9.42	30	16-40	ECO10/120M3V-K
10	0-200	0-15.71	30	16-40	ECO10/200M3V-K
10	210-450	16.49-35.34	30	16-40	ECO10/450M3V-K
10	510-750	40.06-58.90	30	16-40	ECO10/750M3V-K
10	760-1000	59.69-78.54	30	16-40	ECO10/999M3V-K
10	0-120	0-9.42	30	40-100	ECO10/120M4V-K
10	0-200	0-15.71	30	40-100	ECO10/200M4V-K
10	210-450	16.49-35.34	30	40-100	ECO10/450M4V-K
10	510-750	40.06-58.90	30	40-100	ECO10/750M4V-K
10	760-1000	59.69-78.54	30	40-100	ECO10/999M4V-K
15	0-120	0-21.21	25	16-40	ECO15/120M3V-K
15	0-200	0-35.34	25	16-40	ECO15/200M3V-K
15	210-450	37.11-79.52	25	16-40	ECO15/450M3V-K
15	510-750	90.12-132.54	25	16-40	ECO15/750M3V-K
15	760-1000	144.30-176.71	25	16-40	ECO15/999M3V-K
15	0-120	0-21.21	25	40-100	ECO15/120M4V-K
15	0-200	0-35.34	25	40-100	ECO15/200M4V-K
15	210-450	37.11-79.52	25	40-100	ECO15/450M4V-K
15	510-750	90.12-132.54	25	40-100	ECO15/750M4V-K
15	760-1000	144.30-176.71	25	40-100	ECO15/999M4V-K
20	0-120	0-37.70	20	16-40	ECO20/120M3V-K
20	0-200	0-62.83	20	16-40	ECO20/200M3V-K
20	210-450	65.97-141.37	20	16-40	ECO20/450M3V-K
20	510-750	160.22-235.362	20	16-40	ECO20/750M3V-K
20	760-1000	238.76-314.16	20	16-40	ECO20/999M3V-K
20	0-120	0-37.70	20	40-100	ECO20/120M4V-K
20	0-200	0-62.83	20	40-100	ECO20/200M4V-K
20	210-450	65.97-141.37	20	40-100	ECO20/450M4V-K
20	510-750	160.22-235.362	20	40-100	ECO20/750M4V-K
20	760-1000	238.76-314.16	20	40-100	ECO20/999M4V-K

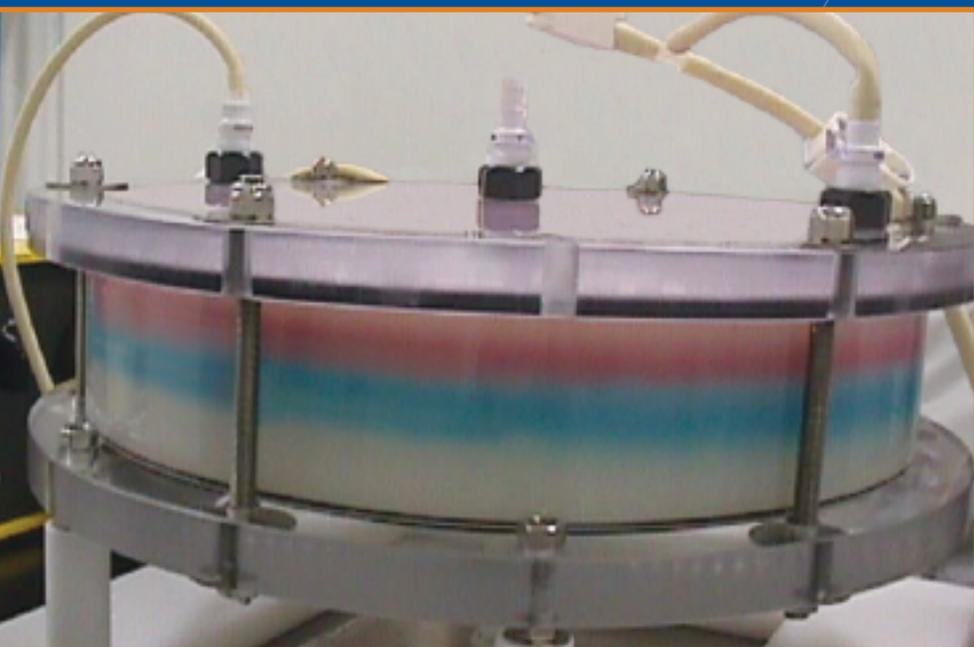


Econoline^{LP}® Column
with frit removal tool.

ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (µm)	ELS Part No
25	0-120	0.58.90	15	16-40	ECO25/120V3V
25	80-200	39.27-98.17	15	16-40	ECO25/200V3V
25	330-450	161.99-220.89	15	16-40	ECO25/450V3V
25	630-750	309.25-368.16	15	16-40	ECO25/750V3V
25	880-1000	431.97-490.87	15	16-40	ECO25/999V3V
25	0-120	0.58.90	15	40-100	ECO25/120V4V
25	80-200	39.27-98.17	15	40-100	ECO25/200V4V
25	330-450	161.99-220.89	15	40-100	ECO25/450V4V
25	630-750	309.25-368.16	15	40-100	ECO25/750V4V
25	880-1000	431.97-490.87	15	40-100	ECO25/999V4V
32	0-120	0.96.51	10	16-40	ECO32/120V3V
32	80-200	64.34-160.85	10	16-40	ECO32/200V3V
32	330-450	265.40-361.91	10	16-40	ECO32/450V3V
32	630-750	506.68-603.19	10	16-40	ECO32/750V3V
32	880-1000	707.74-804.25	10	16-40	ECO32/999V3V
32	0-120	0.96.51	10	40-100	ECO32/120V4V
32	80-200	64.34-160.85	10	40-100	ECO32/200V4V
32	330-450	265.40-361.91	10	40-100	ECO32/450V4V
32	630-750	506.68-603.19	10	40-100	ECO32/750V4V
32	880-1000	707.74-804.25	10	40-100	ECO32/999V4V
50	0-120	0.235.62	10	16-40	ECO50/120V3V
50	80-200	157.08-392.70	10	16-40	ECO50/200V3V
50	330-450	647.95-883.57	10	16-40	ECO50/450V3V
50	630-750	1237.00-1472.62	10	16-40	ECO50/750V3V
50	880-1000	1727.87-1963.49	10	16-40	ECO50/999V3V
50	0-120	0.235.62	10	40-100	ECO50/120V4V
50	80-200	157.08-392.70	10	40-100	ECO50/200V4V
50	330-450	647.95-883.57	10	40-100	ECO50/450V4V
50	630-750	1237.00-1472.62	10	40-100	ECO50/750V4V
50	880-1000	1727.87-1963.49	10	40-100	ECO50/999V4V

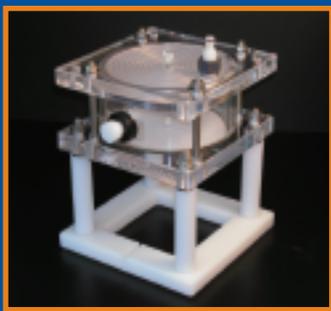
IsoKrom™ Columns

Economical/Sanitary
Process Scale Technology



HIGHLIGHTS:

- All wetted parts are either autoclavable, disposable and/or can be completely taken apart for thorough cleaning.
- Fixed volume, packing through the wall.
- Reduced dead-space by volume (V) and length (L).
- Simple & Robust - IsoKrom™ is designed around standard industrial parts, which lowers the price and assures quality.
- No metal parts contact the solution.



IsoKrom™ Columns

Acrylic columns for preparative low-medium pressure bio-chromatography available from ISO 9000 certified manufacturer

"In a multi-product environment, we install new mesh for each new product run to prevent carry-over contamination. In contrast to IsoKrom, frit replacement in other large columns is expensive, laborious and/or requires factory service".

J. Burton Lee, President,
Lee BioSolutions Inc., MO

"Processes have never been this robust with other systems...[IsoKrom] allows a much faster cycle time for a column run. Production personnel really appreciate when different operators, on different days and with different batches, can consistently reproduce the performance".

Fred Drewe, Ph.D, President,
Drewe Browning Strickler, TX

- Improved column sanitation with a packed bed in (CIP) as well as in a disassembled state.
- Inexpensive mesh replacement eliminates potential carry-over of sorbent and contaminants.
- No packing valves blocking the mesh, no stagnant pockets. Uniform unobstructed flow through the entire bed.
- Shorter dead-space translates into reduced clearance time ($=L^2$), and/or a more thorough CIP.
- Shortended time for column order delivery. Standard parts (Acrylic tube, Nylon mesh, etc.) are available on short notice.
- Due to lower column cost, each purification step can afford a separate dedicated column, with no need to clean and validate re-packing.
- No issues with rusting at low pH and/or at high Chloride, EDTA and Citrate concentration.

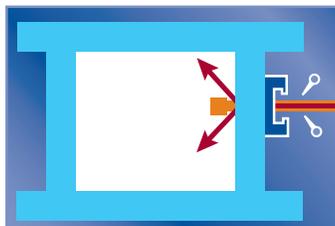
AVAILABLE STANDARD SIZES*

Tube ID (cm) Volume (L) at 20-cm bed

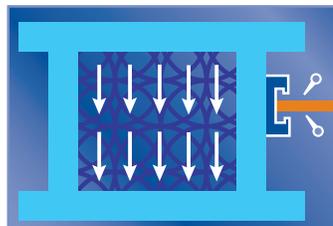
9.5	1.4
13.3	2.8
22.9	8.2
33.0	17.1
47.0	34.7
66.0	68.5
79.0	98.0
102.9	166.2
177.8	496.6
238.8	895.5

*Custom sizes available upon request.

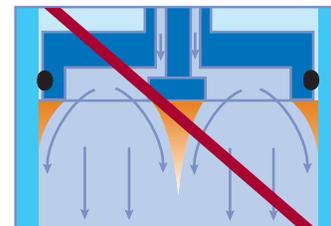
IsoKrom™ Columns



Pack sorbent slurry into precise fixed volume using sidepacking valve.



Packing valve is retracted flush with the wall eliminating dead volume in column.



Other columns employ center packing valve which creates dead volume.

- All wetted parts are either autoclavable, replaceable and/or can be completely taken apart for thorough cleaning.
- No metal parts contact the solution: no issues with rusting at low pH and/or at high NaCl concentration.

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2012 - Now Only Available to Custom Order - 10 sets (each Size) Minimum Order

Media-Flex[®] Columns

*"Quick Change"
Cartridge Lab Columns*



HIGHLIGHTS:

- Pressure to 86 bar
- Low Dead Volume Design
- Fully Visible Bed
- Autoclavable
- Reusable Glass Cartridge
- EPDM Seal for Cold Room Applications

Advantages of Media-Flex® Columns

1 HIGHER PRESSURE RATINGS INCORPORATING GLASS CONSTRUCTION

Pressures to 86 Bars (1,247 psig)
Full view of bed unlike stainless steel
Rugged construction for hard lab use

2 LINEAR MOTION OF PISTON

Due to true linear motion of piston there is no torsional load imposed on the packed bed assuring true linear compression.

3 TRUE FRITS

True frit without the use of sock design employed in less expensive columns assure even flow distribution across the bed.

4 ROBUST INLET AND OUTLET CONNECTIONS

Inlet and outlet connections are made at the exterior of the column, which provide a more reliable and visible connection.

5 FINE THREAD ADJUSTMENT

Columns are provided with fine thread adjustment of piston to allow for precise control of piston placement.

6 QUICK RELEASE ENDS

Design features our unique quick-disconnect end fittings making column disassembly and cartridge removal effortless.

7 UNIQUE CARTRIDGE DESIGN

Media-flex® offers the benefit in that the cartridge unit quickly releases from the housing without disturbing the bed or packing allowing for rapid, inexpensive change-out of the column.

Pressure Limits:
28 - 86 Bars

Connections:
Two 1/4" - 28 Fittings
(one for 1/16" and one for 1/8" capillaries).
The column is supplied with an M6 adapter to allow direct connection to any LC system.

Height Adjustment:
Multi-variable plunger,
6 cm/12 cm adjustment.

Accessories:
Packing adapters
Spare cartridges

MEDIA-FLEX® COLUMN MATERIALS OF CONSTRUCTION

SR (solvent resistant)

- Tube: Borosilicate Glass
- Temperature Range: 18° - 60° C
- Plunger: PTFE
- Seal: PTFE triple chevron
- Frit: ID 5 mm - 15 mm: sinter glass frit
ID 25 mm - 50 mm: stainless steel

AB (aqueous buffer)

- Tube: Borosilicate Glass
- Temperature Range: 4° - 40° C
- Plunger: Polyethylene
- Seal: EPDM O-ring
- Frit: ID 5 mm - 50 mm: polyethylene

Media-Flex Lab[®] Columns

ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (μ m)	Frit Type	Column Type (application)	ELS Part No
5	0 - 120	0.00 - 2.36	86.67	10	Porous Glass	Solvent Resistant (SR)	MF-5-120-L-10-SR
5	60 - 120	1.18 - 2.36	86.67	10	Porous Glass	Solvent Resistant (SR)	MF-5-120-S-10-SR
5	140 - 260	2.75 - 5.11	86.67	10	Porous Glass	Solvent Resistant (SR)	MF-5-260-L-10-SR
5	200 - 260	3.93 - 5.11	86.67	10	Porous Glass	Solvent Resistant (SR)	MF-5-260-S-10-SR
5	380 - 500	7.46 - 9.82	86.67	10	Porous Glass	Solvent Resistant (SR)	MF-5-500-L-10-SR
5	440 - 500	8.64 - 9.82	86.67	10	Porous Glass	Solvent Resistant (SR)	MF-5-500-S-10-SR
5	0 - 120	0.00 - 2.36	86.67	2	Porous Glass	Solvent Resistant (SR)	MF-5-120-L-2-SR
5	60 - 120	1.18 - 2.36	86.67	2	Porous Glass	Solvent Resistant (SR)	MF-5-120-S-2-SR
5	140 - 260	2.75 - 5.11	86.67	2	Porous Glass	Solvent Resistant (SR)	MF-5-260-L-2-SR
5	200 - 260	3.93 - 5.11	86.67	2	Porous Glass	Solvent Resistant (SR)	MF-5-260-S-2-SR
5	380 - 500	7.46 - 9.82	86.67	2	Porous Glass	Solvent Resistant (SR)	MF-5-500-L-2-SR
5	440 - 500	8.64 - 9.82	86.67	2	Porous Glass	Solvent Resistant (SR)	MF-5-500-S-2-SR
10	0 - 120	0.00 - 9.42	80	10	Porous Glass	Solvent Resistant (SR)	MF-10-120-L-10-SR
10	60 - 120	4.71 - 9.42	80	10	Porous Glass	Solvent Resistant (SR)	MF-10-120-S-10-SR
10	140 - 260	11.00 - 20.42	80	10	Porous Glass	Solvent Resistant (SR)	MF-10-260-L-10-SR
10	200 - 260	15.71 - 20.42	80	10	Porous Glass	Solvent Resistant (SR)	MF-10-260-S-10-SR
10	380 - 500	29.85 - 39.27	80	10	Porous Glass	Solvent Resistant (SR)	MF-10-500-L-10-SR
10	440 - 500	34.56 - 39.27	80	10	Porous Glass	Solvent Resistant (SR)	MF-10-500-S-10-SR
10	0 - 120	0.00 - 9.42	80	2	Porous Glass	Solvent Resistant (SR)	MF-10-120-L-2-SR
10	60 - 120	4.71 - 9.42	80	2	Porous Glass	Solvent Resistant (SR)	MF-10-120-S-2-SR
10	140 - 260	11.00 - 20.42	80	2	Porous Glass	Solvent Resistant (SR)	MF-10-260-L-2-SR
10	200 - 260	15.71 - 20.42	80	2	Porous Glass	Solvent Resistant (SR)	MF-10-260-S-2-SR
10	380 - 500	29.85 - 39.27	80	2	Porous Glass	Solvent Resistant (SR)	MF-10-500-L-2-SR
10	440 - 500	34.56 - 39.27	80	2	Porous Glass	Solvent Resistant (SR)	MF-10-500-S-2-SR
15	0 - 120	0.00 - 21.21	66.67	10	Porous Glass	Solvent Resistant (SR)	MF-15-120-L-10-SR
15	60 - 120	10.60 - 21.21	66.67	10	Porous Glass	Solvent Resistant (SR)	MF-15-120-S-10-SR
15	140 - 260	24.74 - 45.95	66.67	10	Porous Glass	Solvent Resistant (SR)	MF-15-260-L-10-SR
15	200 - 260	35.34 - 45.95	66.67	10	Porous Glass	Solvent Resistant (SR)	MF-15-260-S-10-SR
15	380 - 500	67.15 - 88.36	66.67	10	Porous Glass	Solvent Resistant (SR)	MF-15-500-L-10-SR
15	440 - 500	77.75 - 88.36	66.67	10	Porous Glass	Solvent Resistant (SR)	MF-15-500-S-10-SR
15	0 - 120	0.00 - 21.21	66.67	2	Porous Glass	Solvent Resistant (SR)	MF-15-120-L-2-SR
15	60 - 120	10.60 - 21.21	66.67	2	Porous Glass	Solvent Resistant (SR)	MF-15-120-S-2-SR
15	140 - 260	24.74 - 45.95	66.67	2	Porous Glass	Solvent Resistant (SR)	MF-15-260-L-2-SR
15	200 - 260	35.34 - 45.95	66.67	2	Porous Glass	Solvent Resistant (SR)	MF-15-260-S-2-SR
15	380 - 500	67.15 - 88.36	66.67	2	Porous Glass	Solvent Resistant (SR)	MF-15-500-L-2-SR
15	440 - 500	77.75 - 88.36	66.67	2	Porous Glass	Solvent Resistant (SR)	MF-15-500-S-2-SR

ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (um)	Frit Type	Column Type (application)	ELS Part No
20	0 - 120	0.00 - 37.70	60	10	Stainless Steel	Solvent Resistant (SR)	MF-20-120-L-10-SR
20	60 - 120	18.85 - 37.70	60	10	Stainless Steel	Solvent Resistant (SR)	MF-20-120-S-10-SR
20	140 - 260	43.98 - 81.86	60	10	Stainless Steel	Solvent Resistant (SR)	MF-20-260-L-10-SR
20	200 - 260	62.83 - 81.86	60	10	Stainless Steel	Solvent Resistant (SR)	MF-20-260-S-10-SR
20	380 - 500	119.38 - 157.08	60	10	Stainless Steel	Solvent Resistant (SR)	MF-20-500-L-10-SR
20	440 - 500	138.23 - 157.08	60	10	Stainless Steel	Solvent Resistant (SR)	MF-20-500-S-10-SR
20	0 - 120	0.00 - 37.70	60	2	Stainless Steel	Solvent Resistant (SR)	MF-20-120-L-2-SR
20	60 - 120	18.85 - 37.70	60	2	Stainless Steel	Solvent Resistant (SR)	MF-20-120-S-2-SR
20	140 - 260	43.98 - 81.86	60	2	Stainless Steel	Solvent Resistant (SR)	MF-20-260-L-2-SR
20	200 - 260	62.83 - 81.86	60	2	Stainless Steel	Solvent Resistant (SR)	MF-20-260-S-2-SR
20	380 - 500	119.38 - 157.08	60	2	Stainless Steel	Solvent Resistant (SR)	MF-20-500-L-2-SR
20	440 - 500	138.23 - 157.08	60	2	Stainless Steel	Solvent Resistant (SR)	MF-20-500-S-2-SR
25	0 - 120	0.00 - 58.90	50	10	Stainless Steel	Solvent Resistant (SR)	MF-25-120-L-10-SR
25	60 - 120	29.45 - 58.90	50	10	Stainless Steel	Solvent Resistant (SR)	MF-25-120-S-10-SR
25	140 - 260	68.72 - 127.63	50	10	Stainless Steel	Solvent Resistant (SR)	MF-25-260-L-10-SR
25	200 - 260	98.17 - 127.63	50	10	Stainless Steel	Solvent Resistant (SR)	MF-25-260-S-10-SR
25	380 - 500	186.53 - 245.44	50	10	Stainless Steel	Solvent Resistant (SR)	MF-25-500-L-10-SR
25	440 - 500	215.98 - 245.44	50	10	Stainless Steel	Solvent Resistant (SR)	MF-25-500-S-10-SR
25	0 - 120	0.00 - 58.90	50	2	Stainless Steel	Solvent Resistant (SR)	MF-25-120-L-2-SR
25	60 - 120	29.45 - 58.90	50	2	Stainless Steel	Solvent Resistant (SR)	MF-25-120-S-2-SR
25	140 - 260	68.72 - 127.63	50	2	Stainless Steel	Solvent Resistant (SR)	MF-25-260-L-2-SR
25	200 - 260	98.17 - 127.63	50	2	Stainless Steel	Solvent Resistant (SR)	MF-25-260-S-2-SR
25	380 - 500	186.53 - 245.44	50	2	Stainless Steel	Solvent Resistant (SR)	MF-25-500-L-2-SR
25	440 - 500	215.98 - 245.44	50	2	Stainless Steel	Solvent Resistant (SR)	MF-25-500-S-2-SR
50	0 - 120	0.00 - 235.62	28	10	Stainless Steel	Solvent Resistant (SR)	MF-50-120-L-10-SR
50	60 - 120	117.81 - 235.62	28	10	Stainless Steel	Solvent Resistant (SR)	MF-50-120-S-10-SR
50	140 - 260	274.89 - 510.51	28	10	Stainless Steel	Solvent Resistant (SR)	MF-50-260-L-10-SR
50	200 - 260	392.70 - 510.51	28	10	Stainless Steel	Solvent Resistant (SR)	MF-50-260-S-10-SR
50	380 - 500	746.13 - 981.75	28	10	Stainless Steel	Solvent Resistant (SR)	MF-50-500-L-10-SR
50	440 - 500	863.94 - 981.75	28	10	Stainless Steel	Solvent Resistant (SR)	MF-50-500-S-10-SR
50	0 - 120	0.00 - 235.62	28	2	Stainless Steel	Solvent Resistant (SR)	MF-50-120-L-2-SR
50	60 - 120	117.81 - 235.62	28	2	Stainless Steel	Solvent Resistant (SR)	MF-50-120-S-2-SR
50	140 - 260	274.89 - 510.51	28	2	Stainless Steel	Solvent Resistant (SR)	MF-50-260-L-2-SR
50	200 - 260	392.70 - 510.51	28	2	Stainless Steel	Solvent Resistant (SR)	MF-50-260-S-2-SR
50	380 - 500	746.13 - 981.75	28	2	Stainless Steel	Solvent Resistant (SR)	MF-50-500-L-2-SR
50	440 - 500	863.94 - 981.75	28	2	Stainless Steel	Solvent Resistant (SR)	MF-50-500-S-2-SR

Media-Flex Lab[®] Columns

ID (mm)	Bed Length min-max (mm)	Volume min-max (ml)	Pressure Limit (bar)	Frit Porosity (μ m)	Frit Type	Column Type (application)	ELS Part No
5	0 - 120	0.00 - 2.36	86.67	10	Polyethylene	Aqueous Buffer (AB)	MF-5-120-L-10-AB
5	60 - 120	1.18 - 2.36	86.67	10	Polyethylene	Aqueous Buffer (AB)	MF-5-120-S-10-AB
5	140 - 260	2.75 - 5.11	86.67	10	Polyethylene	Aqueous Buffer (AB)	MF-5-260-L-10-AB
5	200 - 260	3.93 - 5.11	86.67	10	Polyethylene	Aqueous Buffer (AB)	MF-5-260-S-10-AB
5	380 - 500	7.46 - 9.82	86.67	10	Polyethylene	Aqueous Buffer (AB)	MF-5-500-L-10-AB
5	440 - 500	8.64 - 9.82	86.67	10	Polyethylene	Aqueous Buffer (AB)	MF-5-500-S-10-AB
5	0 - 120	0.00 - 2.36	86.67	5	Polyethylene	Aqueous Buffer (AB)	MF-5-120-L-5-AB
5	60 - 120	1.18 - 2.36	86.67	5	Polyethylene	Aqueous Buffer (AB)	MF-5-120-S-5-AB
5	140 - 260	2.75 - 5.11	86.67	5	Polyethylene	Aqueous Buffer (AB)	MF-5-260-L-5-AB
5	200 - 260	3.93 - 5.11	86.67	5	Polyethylene	Aqueous Buffer (AB)	MF-5-260-S-5-AB
5	380 - 500	7.46 - 9.82	86.67	5	Polyethylene	Aqueous Buffer (AB)	MF-5-500-L-5-AB
5	440 - 500	8.64 - 9.82	86.67	5	Polyethylene	Aqueous Buffer (AB)	MF-5-500-S-5-AB
10	0 - 120	0.00 - 9.42	80	10	Polyethylene	Aqueous Buffer (AB)	MF-10-120-L-10-AB
10	60 - 120	4.71 - 9.42	80	10	Polyethylene	Aqueous Buffer (AB)	MF-10-120-S-10-AB
10	140 - 260	11.00 - 20.42	80	10	Polyethylene	Aqueous Buffer (AB)	MF-10-260-L-10-AB
10	200 - 260	15.71 - 20.42	80	10	Polyethylene	Aqueous Buffer (AB)	MF-10-260-S-10-AB
10	380 - 500	29.85 - 39.27	80	10	Polyethylene	Aqueous Buffer (AB)	MF-10-500-L-10-AB
10	440 - 500	34.56 - 39.27	80	10	Polyethylene	Aqueous Buffer (AB)	MF-10-500-S-10-AB
10	0 - 120	0.00 - 9.42	80	5	Polyethylene	Aqueous Buffer (AB)	MF-10-120-L-5-AB
10	60 - 120	4.71 - 9.42	80	5	Polyethylene	Aqueous Buffer (AB)	MF-10-120-S-5-AB
10	140 - 260	11.00 - 20.42	80	5	Polyethylene	Aqueous Buffer (AB)	MF-10-260-L-5-AB
10	200 - 260	15.71 - 20.42	80	5	Polyethylene	Aqueous Buffer (AB)	MF-10-260-S-5-AB
10	380 - 500	29.85 - 39.27	80	5	Polyethylene	Aqueous Buffer (AB)	MF-10-500-L-5-AB
10	440 - 500	34.56 - 39.27	80	5	Polyethylene	Aqueous Buffer (AB)	MF-10-500-S-5-AB
15	0 - 120	0.00 - 21.21	66.67	10	Polyethylene	Aqueous Buffer (AB)	MF-15-120-L-10-AB
15	60 - 120	10.60 - 21.21	66.67	10	Polyethylene	Aqueous Buffer (AB)	MF-15-120-S-10-AB
15	140 - 260	24.74 - 45.95	66.67	10	Polyethylene	Aqueous Buffer (AB)	MF-15-260-L-10-AB
15	200 - 260	35.34 - 45.95	66.67	10	Polyethylene	Aqueous Buffer (AB)	MF-15-260-S-10-AB
15	380 - 500	67.15 - 88.36	66.67	10	Polyethylene	Aqueous Buffer (AB)	MF-15-500-L-10-AB
15	440 - 500	77.75 - 88.36	66.67	10	Polyethylene	Aqueous Buffer (AB)	MF-15-500-S-10-AB
15	0 - 120	0.00 - 21.21	66.67	5	Polyethylene	Aqueous Buffer (AB)	MF-15-120-L-5-AB
15	60 - 120	10.60 - 21.21	66.67	5	Polyethylene	Aqueous Buffer (AB)	MF-15-120-S-5-AB
15	140 - 260	24.74 - 45.95	66.67	5	Polyethylene	Aqueous Buffer (AB)	MF-15-260-L-5-AB
15	200 - 260	35.34 - 45.95	66.67	5	Polyethylene	Aqueous Buffer (AB)	MF-15-260-S-5-AB
15	380 - 500	67.15 - 88.36	66.67	5	Polyethylene	Aqueous Buffer (AB)	MF-15-500-L-5-AB
15	440 - 500	77.75 - 88.36	66.67	5	Polyethylene	Aqueous Buffer (AB)	MF-15-500-S-5-AB