

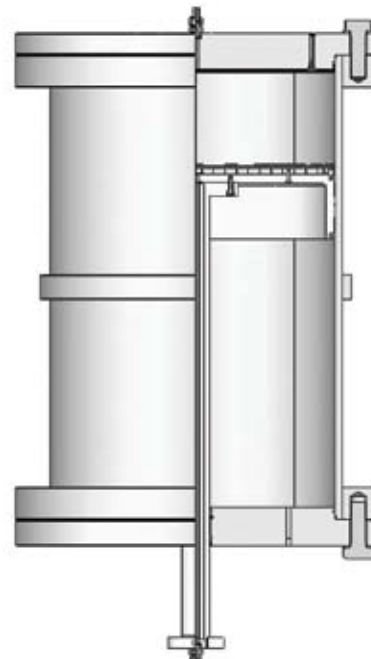
## Peak Biotech A/S

### High Performance DAC Columns

Grace Davison Discovery Sciences offers, custom-made high performance DAC Columns manufactured at Peak Biotech A/S. By combining an HPLC system from Peak Biotech A/S with Grace Davison's premium chromatography media, superior column packing, and technical support, you get a cost effective, robust, and reliable solution for your separation needs.

#### Features & Benefits:

- Simple, robust, customized and sanitary design.
- Fully documented with a variety of options (ATEX®, heating jackets, wheels, etc.).
- Compact and flexible design — Columns are constructed precisely according to customer specifications.
- Easy handling and service with focus on safety.
- Ergonomic working positions.
- Simplified parts list; e.g., same frits and distributor plates on top and bottom outlet enable up and down flow without loss of performance.
- Leak detection system available.
- No sealing adjustment required.
- Minimized dead volume design allows effective CIP procedures.
- Sanitary design inlet and outlet valves and patented; unique sanitary connectors.
- Easy and cost effective maintenance because of removable frit plates, etc.
- Cost-effective in combination with Peak Biotech A/S HPLC systems and the broad media offering from Grace Davison as a single source supplier.



A schematic view of a Peak Biotech A/S high pressure column with special sealing system, which doesn't require sealing adjustment. The internal hydraulic compression system keeps the size of the columns small. Mobile constructions which fit through lab doors are possible up to 300mm i.d. A leak detection system offers high security in production and can prevent losing valuable sample.

[www.discoverysciences.com](http://www.discoverysciences.com)

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### Flexible Column Design

All columns are customized, variable in bed length and are designed with an internal hydraulic compression system that minimizes the size of the column. The mobile construction (up to 300mm i.d.) enables you to move the column in your facility and allows you to pack the column in one location and use it for production in another. Columns are available in dimensions from 50–1000mm and for pressure up to 100 bar. Due to a special mechanism no sealing adjustment is necessary. Columns can be constructed with a platform and a rail to give ergonomic working positions.

The number of diverse parts is reduced to save costs and improve performance. For example, the top and the bottom frit plates have the same design, which allows you to run the column in either the up or the down orientation with an even distributed flow of the solvent and without any loss in performance.

The frit plates are removable and can be replaced easily. This can decrease downtime in your production process and increase productivity because the frits can be cleaned separately in an ultrasonic bath (available as accessory) while your production process is still running.

### High Performance Packing

Specially designed distributor plates enable uniform flow across the bed. With this design, the packing can be automated and provide regularly reproducible performance.

### Documentation

All columns are manufactured according to the customer's specifications. Unlike a standard process column, you only pay for features you need. Columns are CE-marked and cGMP compliant, and can be ordered with; e.g., USP Class VI approved sealing materials. Options including ATEX® certification, isolation, heating jackets, wheels, and more are available. Contact us for further details.

### Sanitary Design

The minimum dead volume design of the columns, the sanitary inlet and outlet valves, and the patented sanitary connectors allow easy and reliable CIP procedures. Additionally, the removable frit plates are a sizeable advantage and offer significant ease of maintenance. They are available in different diameters within a range of pore sizes from 2–75µm. You get a sanitary and reliable separation system, especially when connecting a Peak Biotech A/S column to a Peak Biotech A/S HPLC system.

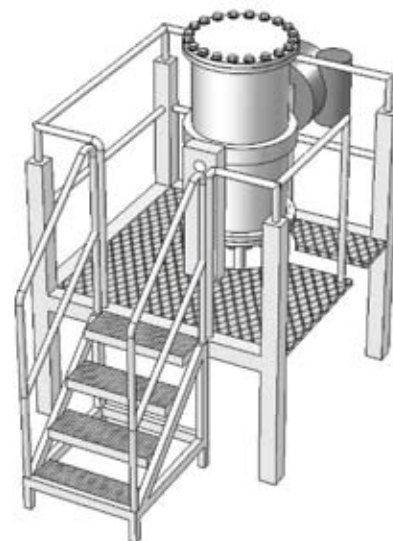
### Accessories

A broad range of process accessories, including handling equipment for column maintenance, buffer tanks, slurry units for soft and silica media, packing stations, ultrasonic baths up to 1,2m diameter are available. Contact us for more details.

### Your Benefit

Grace Davison offers complete process separation systems from a single source. Grace Davison process separation systems can help you to purify your target compounds faster, more reliably and consistently, and with higher pass rates. This increase in productivity can help you to introduce new drugs earlier and get your return on investment faster.

The Grace Davison Discovery Sciences process HPLC systems consists of a Peak Biotech A/S high performance column, packed with Grace Davison premium media and combined with high level technical support, connected to a Peak Biotech A/S Process chromatography system, operated with a complete range of process scale accessories.



450mm x 800mm HPLC column with platform, stairs and handrail for convenient and safe operation. The column can be turned automatically (motor driven) to facilitate packing and unpacking.



600mm x 1200mm HPLC column. Pressure rated for up to 100 bar. Mobile construction with motor driven column turner to facilitate column packing and unpacking.

## Materials and Construction

**Construction:** All columns are CE-marked and cGMP compliant.

**Parts in product contact:** Stainless Steel 316L,  
Duplex or Hastelloy®.  
PEHD or PTFE sealings in FDA approved Materials  
(USP Class VI is optional).

**Construction codes:** PED for Europe.  
ASME for US.

**Design codes:** ASME BPE



The 200mm x 700mm HPLC column is a slim, mobile construction. It fits to a lab door of 800mm width. Mechanical column turning device included to facilitate packing and unpacking. All Peak Biotech A/S columns are custom designed to meet exactly the customer needs.

## General Specifications (guideline):

<b>Column Diameters:</b>	50–1000mm
<b>Pressure Rating:</b>	3-100 bar
<b>Ultra Sonic Baths:</b>	up to 1200mm diameter
<b>Solvent Tanks:</b>	mobile: 1–500l stationary: 1–3000l

These specifications are guidelines. Please contact us for detailed information

### Options

- Explosion proof, ATEX®.
- Isolated shell for cooling or heating.
- USP Class VI approved sealing materials.
- Stand for ergonomic handling position, when operating larger columns.
- Fixed bed.
- Slurry inlet valve for quick packing.

### Qualification, Validation and Services

- Function test
- FAT (Factory Acceptance Test)
- SAT (Site Acceptance Test)
- IQ (Installation Qualification)
- OQ (Operation Qualification)
- Training of users
- Installation support on site
- Startup support

Every stainless steel part in the construction is traceable with a certificate of analysis and elastomers are documented according to the FDA.

### Accessories

- Handling equipment for column maintenance.
- Packing stations.
- Slurry units (see separate folder) for easy packing and handling of packing material.

### Data Sheets

The following pages contain data guidelines for different column diameters. The column will be designed to the requested flow rate. Flow rates are independent of other column specifications. The bed length is adjustable from 10mm and up.

*Other dimensions available on request.*

## Grace® Related Products

Grace offers a wide range of scalable process media (spherical, spheroidal and irregular), as well as instrumentation for method development, sample clean up, Flash chromatography (Reveleris™ system), and analytical columns with a big variety of selectivities. Please contact your Grace office for more details.

The following pages contain data guidelines for different column diameters. The column will be designed to the requested flow rate. Flow rates are independent of other column specifications. The bed length is adjustable from 10mm and up.

### Peak HP DAC Columns

Type	Diameter [mm]	Packed bed length (depending on slurry concentration) [mm]	Packed bed volume (depending on slurry concentration) [liter]	Max. uncompressed slurry volume [liter]	Cross sectional area [cm <sup>2</sup> ]	Operating pressure [bar]
PEAK-C-40-50-500	50	10-400	0,02-0,8	1	19,6	0-100
PEAK-C-40-75-500	75	10-400	0,04-1,8	2,2	44,2	0-100
PEAK-C-40-100-500	100	10-400	0,1-3,14	3,9	78,5	0-100
PEAK-C-40-150-500	150	10-400	0,2-7,1	8,8	177	0-100
PEAK-C-40-200-500	200	10-400	0,3-12,6	15,7	314	0-100
PEAK-C-40-250-500	250	10-400	0,5-19,6	24,5	491	0-100
PEAK-C-40-300-500	300	10-400	0,7-28,3	35	706	0-100
PEAK-C-40-350-500	350	10-400	1-38,5	48	962	0-100
PEAK-C-40-400-500	400	10-400	1,3-50,2	63	1256	0-100
PEAK-C-40-450-500	450	10-400	1,6-63,6	79	1590	0-100
PEAK-C-40-500-500	500	10-400	2,0-78,5	98	1963	0-100
PEAK-C-40-600-500	600	10-400	2,8-113	141	2827	0-100
PEAK-C-34-700-500	700	10-400	3,8-153,9	192	3848	0-70
PEAK-C-34-800-500	800	10-400	5,0-201	251	5026	0-70
PEAK-C-34-900-500	900	10-400	6,4-254,3	318	6278	0-70
PEAK-C-34-1000-500	1000	10-400	7,9-314	393	7854	0-70
PEAK-C-34-1100-500	1100	10-400	9,5-380	475	9498	0-70
PEAK-C-34-1200-500	1200	10-400	11,3-452	565	11310	0-70
PEAK-C-40-50-700	50	10-560	0,02-1,1	1,4	19,6	0-100
PEAK-C-40-75-700	75	10-560	0,04-2,5	3,1	44,2	0-100
PEAK-C-40-100-700	100	10-560	0,1-4,4	5,5	78,5	0-100
PEAK-C-40-150-700	150	10-560	0,2-10	12	177	0-100
PEAK-C-40-200-700	200	10-560	0,3-17,6	22	314	0-100
PEAK-C-40-250-700	250	10-560	0,5-27,5	34	491	0-100
PEAK-C-40-300-700	300	10-560	0,7-39,6	49	706	0-100
PEAK-C-40-350-700	350	10-560	0,1-53,9	67	962	0-100
PEAK-C-40-400-700	400	10-560	1,26-70,3	88	1256	0-100
PEAK-C-40-450-700	450	10-560	1,6-89	111	1590	0-100
PEAK-C-40-500-700	500	10-560	2-109,9	137	1963	0-100
PEAK-C-40-600-700	600	10-560	2,8-158,3	198	2827	0-100
PEAK-C-34-700-700	700	10-560	3,9-215,4	269	3848	0-70
PEAK-C-34-800-700	800	10-560	5,02-281,3	352	5026	0-70
PEAK-C-34-900-700	900	10-560	6,4-356,1	445	6278	0-70
PEAK-C-34-1000-700	1000	10-560	7,9-439,6	550	7854	0-70
PEAK-C-34-1100-700	1100	10-560	9,5-531,9	665	9498	0-70
PEAK-C-34-1200-700	1200	10-560	11,3-633	791	11310	0-70

## Peak HP DAC Columns

Type	Diameter [mm]	Packed bed length (depending on slurry concentration) [mm]	Packed bed volume (depending on slurry concentration) [liter]	Max. uncompressed slurry volume [liter]	Cross sectional area [cm <sup>2</sup> ]	Operating pressure [bar]
PEAK-C-40-50-1000	50	10-800	0,02-1,6	2	19,6	0-100
PEAK-C-40-75-1000	75	10-800	0,04-3,5	4,4	44,2	0-100
PEAK-C-40-100-1000	100	10-800	0,1-6,3	7,9	78,5	0-100
PEAK-C-40-150-1000	150	10-800	0,2-14,1	18	177	0-100
PEAK-C-40-200-1000	200	10-800	0,31-25,1	31	314	0-100
PEAK-C-40-250-1000	250	10-800	0,5-39,3	49	491	0-100
PEAK-C-40-300-1000	300	10-800	0,7-56,5	71	706	0-100
PEAK-C-40-350-1000	350	10-800	1-76,9	96	962	0-100
PEAK-C-40-400-1000	400	10-800	1,3-100,5	126	1256	0-100
PEAK-C-40-450-1000	450	10-800	1,6-127,2	159	1590	0-100
PEAK-C-40-500-1000	500	10-800	2-157	196	1963	0-100
PEAK-C-40-600-1000	600	10-800	2,8-226,1	283	2827	0-100
PEAK-C-34-700-1000	700	10-800	3,9-307,7	385	3848	0-70
PEAK-C-34-800-1000	800	10-800	5-401,9	502	5026	0-70
PEAK-C-34-900-1000	900	10-800	6,4-508,7	636	6278	0-70
PEAK-C-34-1000-1000	1000	10-800	7,9-628	785	7854	0-70
PEAK-C-34-1100-1000	1100	10-800	9,5-759,9	950	9498	0-70
PEAK-C-34-1200-1000	1200	10-800	11,3-904,3	1130	11310	0-70
PEAK-C-40-50-1500	50	10-1200	0,02-2,4	2,9	19,6	0-100
PEAK-C-40-75-1500	75	10-1200	0,04-5,3	6,6	44,2	0-100
PEAK-C-40-100-1500	100	10-1200	0,1-9,4	12	78,5	0-100
PEAK-C-40-150-1500	150	10-1200	0,2-21,2	26	177	0-100
PEAK-C-40-200-1500	200	10-1200	0,31-37,7	47	314	0-100
PEAK-C-40-250-1500	250	10-1200	0,5-58,9	74	491	0-100
PEAK-C-40-300-1500	300	10-1200	0,7-84,8	106	706	0-100
PEAK-C-40-350-1500	350	10-1200	1-115,4	144	962	0-100
PEAK-C-40-400-1500	400	10-1200	1,3-150,7	188	1256	0-100
PEAK-C-40-450-1500	450	10-1200	1,6-190,8	238	1590	0-100
PEAK-C-40-500-1500	500	10-1200	2-235,5	294	1963	0-100
PEAK-C-40-600-1500	600	10-1200	2,8-339,1	424	2827	0-100
PEAK-C-34-700-1500	700	10-1200	3,85-461,6	577	3848	0-70
PEAK-C-34-800-1500	800	10-1200	5-602,9	754	5026	0-70
PEAK-C-34-900-1500	900	10-1200	6,4-763	954	6278	0-70
PEAK-C-34-1000-1500	1000	10-1200	7,9-942	1178	7854	0-70
PEAK-C-34-1100-1500	1100	10-1200	9,5-1139,8	1425	9498	0-70
PEAK-C-34-1200-1500	1200	10-1200	11,3-1356,5	1696	11310	0-70