Back Pressure Regulators

Preventing solvent degassing in your HPLC detector is especially easy when you use our back pressure regulators (BPR). In addition, your pump will operate more efficiently at low pressures and low flow rates.

The job becomes even simpler and more economical when you use a replaceable cartridge system. These cartridges are accurately adjusted to the most common pressures required by chromatographers. In addition, they have an extremely low deadvolume - 146µL. Its flow-thru design enables the regulators to be inserted in-line after the detector and before a flow meter or fraction collector. The regulator can also be immersed in a solvent waste reservoir.

The back pressure regulator has internal 1/4-28 threads compatible with any flange tubing system. The regulator comes complete with Upchurch flangeless fitting nuts and ferrules.

We recommend the 100 psi regulator cartridge for most detectors.

PEEK BPR Assemblies

Cat. No.	Description	Price
P-790	5 psi BPR	
P-791	20 psi BPR	
P-785	40 psi BPR with P-761	
P-786	75 psi BPR with P-762	
P-787	100 psi BPR with P-763	
P-788	250 psi BPR with P-764	
P-789	500 psi BPR with P-765	
P-455	1,000 psi BPR with P-796	

Stainless Steel Back Pressure Regulators

U-605	40 psi BPR with P-761	
U-606	75 psi BPR with P-762	
U-607	100 psi BPR with P-763	
U-608	250 psi BPR with P-764	
U-609	500 psi BPR with P-765	

BPR Cartridges

Cat. No.	Description	Body	End-Cap	Price
P-761	40 psi PEEK	tan	blue	
P-762	75 psi PEEK	tan	yellow	
P-763	100 psi PEEK	tan	red	
P-764	250 psi PEEK	tan	white	
P-765	500 psi PEEK	tan	green	
P-795	750 psi PEEK	black	blue	
P-796	1,000 psi PEEK	black	green	

BPR Cartridge Holders

Cat. No.	Description	Price
P-465	PEEK BPR holder	
U-469	High pressure SS BPR holder	

High Pressure Adjustable Back Pressure Regulator Assembly

P-880	2,000-5,000 psi Adjustable BPR	

The P-880 BPR offers the flexibility to adjust your system back pressure between 2,000 and 5,000 psi, independent of flow. Simply turn the thumbscrew, while monitoring your system pressure, to achieve the desired back pressure setting.

Ultra-Low Volume BPRs

Our ultra-low volume back pressure regulators (BPRs) were developed to minimize swept volume, which is especially important for multi-detector applications. With a maximum internal swept volume of only 6µL*, it is nearly impossible to detect these BPRs as part of your fluid pathway.

And, because the flow path is completely polymeric, you are assured of biocompatibility. Our ultra-low volume BPRs are available with back pressure settings of 100 and 500 psi. The units can be operated above and below their flow rate recommendations, however, the resulting back pressure will differ from that set at the factory. An externally-mounted set screw allows adjustments to the back pressure rating. Care must be taken to ensure that the resulting back pressure does not exceed the maximum recommended pressure rating.

To minimize the amount of additional swept volume being added to your flow path, we highly recommend you trim down the length of the attached tubing.

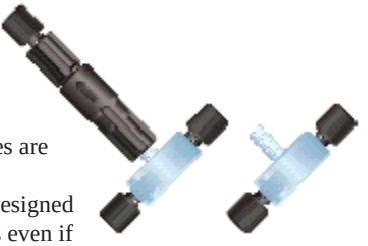
Ultra-Low Volume Back Pressure Regulators

Cat. No.	Description	1/16"OD Tubing	Price
M-410	100 psi low flow (.5 mL/min)	PEEK, .010" ID	
M-412	500 psi low flow (.5 mL/min)	PEEK, .010" ID	
M-415	100 psi low flow (.5 mL/min)	Teflon, .010" ID	
M-420	100 psi high flow (5 mL/min)	PEEK, .020" ID	

*All Back Pressure Regulators listed above ship complete with P-230 flangeless nuts and P-200 ferrules.

Pressure Relief Valve

- **.020" thru-hole**
- **Low dead-volume**
- **Flangeless fittings**



Upchurch pressure relief valves are ideal for preventing system overpressurization. They are designed to protect system compontents even if flow is blocked while the pump is on.

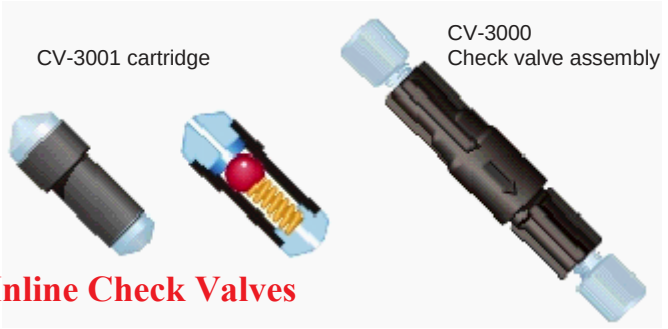
Choose between our preset 100 psi and 5 psi assemblies, both of which come complete with flangeless fittings. The 100 psi version is a good, general purpose valve, while the 5 psi version is perfect for protecting syringe and peristaltic pump systems. The void volume of both relief valves is low, due to the small .020" thru-holes in the valve tee body.

If you wish to have the pressure relief valve open at a different pressure, simply combine one of the other replacement back pressure regulator assemblies listed on this page with the P-612 pressure relief valve tee.

Cat. No.	Description	Price
U-455	5 psi Pressure relief valve for 1/16" OD tubing	
U-456	100 psi Pressure relief valve for 1/16" OD tubing	
P-612	Tee, pressure relief valve tee for 1/16" tubing	
P-612S	Tee, pressure relief valve tee for 3/16" tubing	

Flow Control

Check Valves



Inline Check Valves

- **Less than 150µL internal volume**
- **Low cracking pressure**

Designed for placement in the flow system where you wish to limit the flow to only one direction. Ideal for post-column derivatization applications where flow back through the column must be avoided. These assemblies will hold pressures of 1,000 psi. If the flangeless fittings that accompany the assemblies are replaced with super flangeless fittings, the check valve assemblies will hold up to 5,000 psi in the reverse direction.

The CV-3010 assembly and CV-3011 cartridge are designed specifically to be used in degassing lines to prevent solvent from backing up in the event the sparging gas runs out. This check valve will prevent solvent cross-contamination and damage to the gas regulating valve.

Please note: The CV-3001 cartridge incorporates a gold-plated SS spring and a perfluoroelastomer seal, while the CV-3011 contains a standard SS spring and an ethylene propylene seal.

Cat. No.	Description	Price
CV-3000	Inline check valve assy. for 1/16" OD tubing	
CV-3001	Repl. check valve cartridge for CV-3000	
CV-3010	Inline check valve assy. for 1/8" OD tubing	
CV-3011	Repl. check valve cartridge for CV-3010	

Quick-Stop Luer Check Valve

Our Quick-Stop Luer Check Valve is designed to provide check valve protection with luer connect/ disconnect convenience. Just insert the valve into your low pressure system with standard 1/4-28 flat bottom fittings and the included luer components.

The check valve is automatically opened once the luer connection is engaged, allowing flow in either direction. Disconnecting the luer union causes the check valve to close.

Install a Quick-Stop luer check valve assembly between your solvent reservoir and the pump, with the valve towards the bottle. The valve will prevent solvent leakage from the line coming from the reservoir, while the check valves in your pump prevent spills from the line leading to the pump. With both lines still full of solvent, this system also eliminates the need to reprime your pump.

Cat. No.	Description	Price
P-696	Quick-Stop luer check valve assembly	
P-697	Replacement luer check valve	

1/4-28 Inline Check Valves

- **Back-flow protection without additional connections**
- **Add to any 1/4-28 flat-bottom port**
- **Excellent chemical resistance**

These inline check valves connect directly to any 1/4-28 flat-bottom port. Thread your fitting directly into the check valve to connect the tubing. Once installed, the spring-actuated sealing system quickly eliminates back flow, thereby preventing any upstream contamination or damage. In addition, the unique design of this product eliminates the additional tubing cuts and connections that are required to install conventional inline check valves.

The 1/4-28 inline check valves are constructed from materials offering excellent chemical resistance: PEEK™, Kel-F®, PTFE Teflon® (CV-3301 and CV-3302 only), stainless steel or gold plated stainless steel springs, and perfluoroelastomer.

Our 1/4-28 inline check valves accommodate 1/16", 1/8" and 1.8 2.0mm OD tubing, depending on the fittings used. Select from our broad line of flangeless and super flangeless nuts and ferrules.

Non-Metallic Versions

These products are constructed of chemically resistant PEEK and perfluoroelastomer polymers. The metal-free design makes these check valves perfect for use with corrosive fluids and biocompatible samples.

1/4-28 Inline Check Valves

Cat. No.	Description	Cracking Pressure	Price
CV-3301	Inlet check valve (red tip)	15 psi	
CV-3302	Outlet check valve (green tip)	15 psi	
CV-3315	Inlet check valve (red tip)	3 psi	
CV-3316	Outlet check valve (green tip)	3 psi	

Non-Metalic 1/4-28 Inline Check Valves

CV-3320	Inlet check valve	1 psi	
CV-3321	Outlet check valve	1 psi	

	Swept Volume	Max. Pressure Rating	Back Pressure Created
CV-3301, CV-3302	20µL	2,000 psi	45 psi
CV-3315, CV-3316	16µL	2,000 psi	10 psi
CV-3320, CV-3321	37µL	2,000 psi	30 psi

Adjustable Back Pressure Regulator

- **Adjustable from 15 to 60 psi**
- **Improves baseline stability**

Back pressure regulators (BPR) are specifically designed to maintain constant pressure to an HPLC detector outlet. Installation of a back pressure regulator at the detector outlet improves its performance by preventing bubble formation in the detector flow cell.

Chemically inert to common HPLC solvents and are well-suited for low-flow applications (under 50µL/min). The standard back pressure regulator is fitted to the detector outlet using either a 1/4-28 plastic flange-type fitting or a high-pressure stainless steel SSI-type fitting. The fittings are included.

Cat. No.	Description	Price
02-0175	BPR with flanged tubing seat, 1/16" OD	
02-0176	BPR with high pressure seat	
02-0177	Replacement seal kit (seal clip, hex key, pin)	

Flow-Through Back Pressure Regulator

- **Biocompatible**
- **Low dead volume (5µL)**
- **Adjustable from 7 to 75 psi**

Efficiently protects against bubble formation.

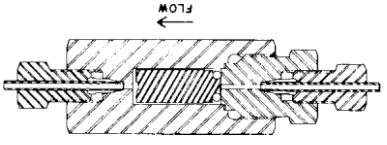
SSI's flow-thru back pressure regulator is most often used in the flow path between two detectors which are linked in series.

It provides low back pressure to the downstream detector and maintains a stable baseline. It can also be used in post-column reaction lines and between the detector and fraction collector in preparatory work.

One of the most important considerations when installing a back pressure regulator into the mobile phase path is its effect on system efficiency. With SSI's well swept flow-thru design, there is minimal effect on efficiency. Internal volume of the flow-through back pressure regulator is only 5µL.

Cat. No.	Description	Price
06-0120	Flow-through back pressure regulator	
06-0119	Replacement seal kit for 06-0120	

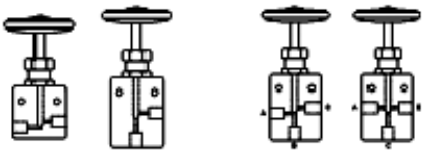
Check Valve



The SSI check valve with dual-seal, gravity assisted poppet design employs a soft seat providing a liquid-tight seal at low back pressures and a metal-to-metal backup seat for closures at high pressures. Low internal volume allows simple purging while vertical mounting eliminates air entrapment. Check valves permit flow in one direction only.

Cat. No.	Description	Price
02-0129	Check valve	

SSI Valves



Two-Way Valve

The two-way valve is generally used as a "stop-flow" valve. When placed between the pump and the injector, it can be used to trap peaks in the cell of a variable wavelength detector. It also can be used where normal closed check valves are used, for example, on the filling reservoir lines of a syringe pump. Shut-off valves are also used in high pressure column packing systems.

Three-way Valve

The three-way valve may also be used between the pump and the injection valve to allow the pump to be purged rapidly during solvent changeover and to release downstream pressure to aid pump priming. Strategically placed in relation to the mixing system of a dual pump liquid chromatograph, the three-way valve allows rapid flushing of the mixer - a time saver during solvent changeover.

SSI Valve Ordering Information

Cat. No.	Description	Price
02-0120	Two-way thru valve	
02-0121	Two-way angle valve	
02-0125	Three-way valve side vent	
02-0124	Three-way valve bottom vent	

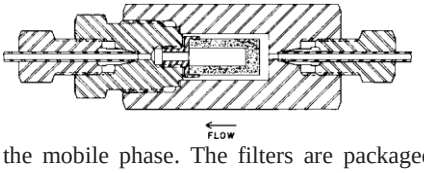
Tees

Tees are special 3-way couplings that have many LC applications, including multi pump gradient formation, pressure gauge connection, stream splitting derivatization reaction systems, fraction collection and many others.

Cat. No.	Description	Price
01-0164	Tee, .043" thru hole	
01-0165	Tee, .015" thru hole	

Inline Filter

- **Up to 15,000 psi**
- **Made from 316 SS**



Placed between the pump and the injector, SSI high pressure inline filters provide a final polish to the mobile phase. The filters are packaged with appropriate gland nuts and ferrules for 1/16" OD tubing.

Cat. No.	Description	Price
25-0105	0.5µm In-line filter with 10-32 fitting	
25-0108	2µm In-line filter with 10-32 fitting	
05-0105	0.5µm In-line filter with 1/4-28 coned fitting	
05-0108	2µm In-line filter with 1/4-28 coned fitting	
05-0106	0.5µm Repl. filter elements and seals, 2/pk	
05-0107	2µm Repl. filter elements and seals, 2/pk	

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