

OPERATING INSTRUCTIONS

ADJUSTABLE BACK-PRESSURE REGULATORS

Restek cat.# 25017

DESIGN

Back-pressure regulators (BPR) use an unusual mechanism to insure constant pressure over a wide range of mobile phase flows and viscosities. The unit is immune to clogging common with restrictor-type devices, which can cause baseline drift or system damage.

Bubble formation in the detector cell is minimized and baseline stability is greatly improved, often without the need for continuous degassing. Adjustment from one to four atmospheres (15-60 psi) allows compatibility with virtually any detector. The back-pressure regulators are small (4 cm L. x 1.3 cm D), chemically inert to common HPLC solvents, and can operate reliably when totally immersed in the water reservoir.

INSTALLATION

Back pressure regulator connects to 1/4"-28 plastic flanged tubing fittings which is supplied with a 24" flanged Teflon® tubing assembly with fittings as a standard accessory with 25017 BPR only. To connect to flanged tubing: simply screw plastic nut and flanged tubing into the BPR inlet, tighten finger tight, and "snug up" slightly with a 5/16" wrench (holding the BPR only with the hand). Connect the tubing to the detector outlet. The recommended method is to cut the 1/16" Teflon® tubing at a convenient point and connect it to the detector outlet using a compatible 1/16" coupling (union).

High pressure back-pressure regulator connects to 1/16" OD tubing, including type 316 stainless steel tubing, with a standard SSI tubing connection. This BPR is especially useful if the HPLC detector outlet has 1/16" tubing with no fittings installed.

To connect high pressure BPR to 1/16" tubing:

1. Slide gland nut and ferrule over the tubing. Ensure that the wider diameter "back end" of the ferrule will smoothly contact with the cupped recess in the threads of the gland nut.
2. Insert the tubing into the BPR inlet.
3. With the tubing tight against the bottom of the tubing connection seat, tighten the gland nut until the tubing is snug in the ferrule.
4. Secure the BPR with a 7/16" wrench and tighten the gland nut an additional 3/4 of a turn with a 5/16" wrench.

DISASSEMBLY

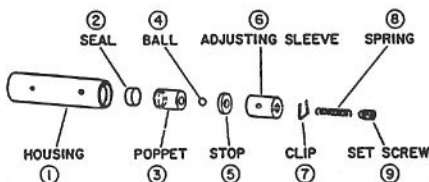
1. Disconnect the BPR from the system.
2. Place the BPR in a clear plastic bag large enough for both hands.
3. With the BPR vertical, remove the set screw counterclockwise as described in ADJUSTMENT.
4. With a jeweler's or other small screwdriver, gently pry each of the legs of the retaining clip up out of the groove (keeping a finger over the opening to avoid losing the clip). Remove the clip.
5. By inverting the assembly in a small container, the rest of the components will drop out of the housing.

CLEANING

Use any conventional detergents or cleaners and, if available, an ultrasonic bath. Do not subject BPR components to temperatures above 70°C in order to prevent possible distortion of fluorocarbon components.

REASSEMBLY

1. Insert the cleaned or new seal fully into the poppet (using light finger pressure) with the best face of the seal exposed.
2. Assemble components (1) through (6) as shown in the diagram.
3. Place the two bends of the retaining clip (7) in the housing groove with the legs above the end of the housing. With the finger, hold one leg in place and push the other leg downward and inward until it snaps into the groove. Repeat with the other leg of the clip.
4. Insert the spring (3) fully into the hole and follow with the set screw (9), using a pin in the hole as described in ADJUSTMENT. Adjust to desired back-pressure.
5. Place the BPR in the waste container. The mobile phase will exit the BPR housing through several openings.



REPLACEMENT PARTS & ACCESSORIES

DESCRIPTION

Replacement seal kit,

(includes: seal, clip, hex key, and pin)

1/16" SSI Coupling, .043" thru hole

1/16" SSI Coupling, .015" thru hole

1/16" SSI Coupling, .010" thru hole

1/16" SSI to Plastic Flange Adapter Coupling

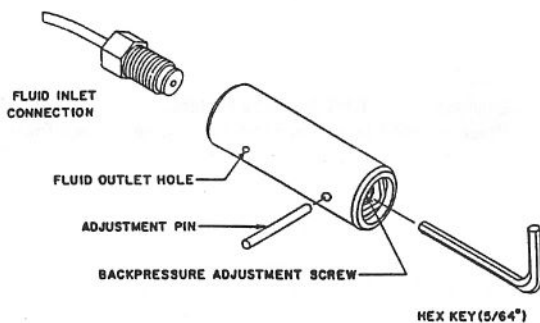
ADJUSTMENT

As supplied, the BPR is adjusted to a nominal 40 psi (0.28 MPa) at a flow rate of 2 mL/minute, satisfactory for most applications and detector pressure ratings. If necessary, the BPR may be adjusted within the range of approximately 15 to 60 psi (0.10-0.41 MPa).

To adjust:

1. Insert a 5/64" hex key in set screw in the end of the BPR. As it is turned, the white plastic adjusting sleeve tends to turn with it. To prevent this, take a blunt-tipped 1/16" diameter pin and lightly insert the pin into the larger side hole in the BPR housing.
2. Turn the hex key counterclockwise until the 1/16" pin drops into the recess in the adjusting sleeve.
3. With the pin in place, turn the hex key clockwise to increase back-pressure or counterclockwise to decrease back-pressure.

CAUTION: When tightening in a clockwise direction, the set screw will hit a safety stop. Further tightening will only result in damage to the BPR. When loosening the counterclockwise direction, the short set screw should only come flush with the top of the white adjusting sleeve or it and other components may fall out and be lost.



MAINTENANCE

By virtue of the design and the materials employed, the back-pressure regulator should require little, if any maintenance. It is recommended that the user have on hand a replacement seal kit before attempting maintenance.*

*Contact Technical Service.