

Start-up guide

Introduction

Congratulations on the purchase of the Antec Scientific PEEK pulsation damper (pn 255.0035). The device, which can be easily integrated in the P6.1 L pump flow path of an ALEXYS analyzer, is exclusively designed to effectively reduce the residual pressure pulsations in an HPLC system to assure smooth baselines and optimal detection sensitivity. All wetted parts in contact with mobile phase are made from PEEK so the damper is in particular suitable for High-Performance Anion-Exchange Chromatography in combination with Pulsed Amperometric Electrochemical detection (HPAEC-PAD), which require a metal-free flow path. All PEEK pulsation dampers are individually QC tested and delivered with a test certificate. Please read and follow the guidelines below carefully to ensure proper installation, optimal performance and maximum lifetime. Please do not operate the pulsation damper at pressures higher than 400 bar.

Installation

In this paragraph the installation procedure is described. For installation the following tools are advised:

- 50% v/v isopropyl alcohol (IPA)/water (for cleaning)
- Tweezer* (removal of protective tape)
- Plastic tubing cutter (pn 250.1020)[#]
- Tightening tool PEEK hex-head 1/16" nuts (pn 250.0094)
- DI water as mobile phase (priming of damper)

*) or other sharp object to peel of protective tape. #) The plastic cutter and tightening tools are available as purchase part at Antec (see pn).

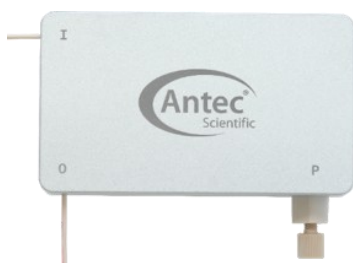


Figure 1. AS PEEK pulsation damper (pn. 255.0035) with I = Inlet; O = Outlet and P = Purge port.

The pulse damper is delivered with two PEEK hex-head finger tightens (pn 250.1572). Do not use a wrench to tighten the PEEK hex-head finger tightens, they might break/snap off due to application of a too high force.

To install the pulsation damper on a P6.1L pump follow the steps below carefully:

1. Prepare the pump by purging it with high-purity water (resistivity 18.2 MOhm.cm; TOC<10 ppb).
2. Identify the version of the P6.1L pump* to determine the mounting position on the pump:
 - (a) for LPG version (pn 194.APH64EB) top right.
 - (b) for SSV version (pn. 194.APH61EB) in the middle.

*) In the case of a third-party HPLC pump mount it on a suitable position on the exterior.

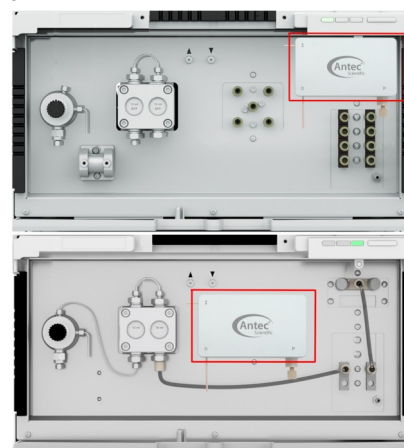


Figure 2. Top: Schematic drawing of position of pulsation damper on P6.1L gradient LPG version. Bottom: Schematic drawing of position of pulsation damper on P6.1 isocratic SSV version.

3. Clean/degrease the surface area of the P6.1L front panel with the IPA/water mixture at the position where the pulsation damper will be mounted.
4. Each rear corner of the pulsation damper carries a small strip of 3M Dual Lock tape for mounting. The four mating strips - which get adhered to the P6.1L front panel - are pre-attached on top of these, with the protective liner still covering their adhesive side. Remove all liner of the mating strips with a tweezer or other sharp object.



Figure 3. Left: rear side of pulsation damper with 3M dual locking tape. Right: removal of protective liner.



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- Adhere the pulsation damper firmly to the designated location on the P6.1L front panel, applying sufficient pressure. 3M recommends a minimum of 24 hours before applying a strong load to the bond or disengaging/removing the pulsation damper. The rest of the installation can continue in the meantime — just avoid stressing or removing the damper during this curing period.
- Connect the tubing end from the **I**(nlet) port to the outlet of the P6.1L pump using one of the supplied PEEK fingertights (pn 250.1572).
- The tubing end from the **O**(utlet) port can be connected to:
 - The inlet of a Borate trap column (pn 260.0030 or 260.0031) using the supplied PEEK fingertight. Please cut 40 cm of the tubing end with a tubing cutter first to optimize the tubing length/volume in this case. See schematic drawing in figure 4 for reference.
 - Port 1 of the injector of an AS6.1L autosampler (pn 191.AAAxxAA) in the case no borate trap is installed in the LC system.
 - Post-column tubing assembly (pn 180.0220B or 180.0220C) using the union supplied in the post-column connection kit.

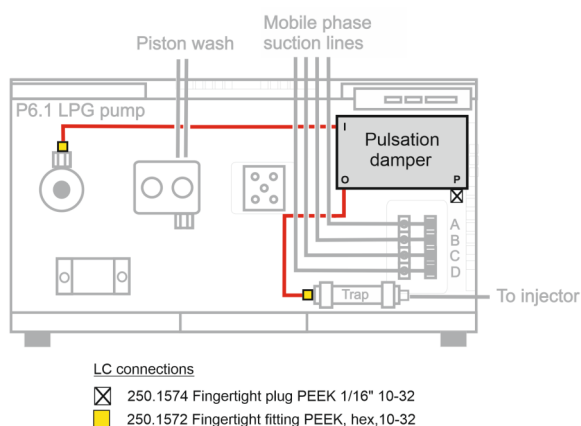


Figure 4. Schematic drawing of the pulsation damper connections to the borate trap column on a P6.1 LPG pump. Please note that the PEEK inlet and outlet lines must be routed underneath the piston wash and mobile phase lines.

Priming the pulsation damper

Off factory the pulsation damper is shipped dry, without liquids/mobile phase inside. To prime the pulsation damper execute the following steps:

- remove the PEEK plug from the bulkhead union to open the **P**(urge) port.

- Place a beaker under the opened purge port or temporarily connect a waste line (with an ID of at least 0.5 mm/orange code) to prevent leakage on the leak tray of the pump (this will activating an alarm).
- Set the pump flow rate to 2 mL/min and purge the pulsation damper for 5–10 minutes.
- Before stopping the flow check if the liquid stream exiting the purge port is free of air bubbles.
- Close the purge port again with the PEEK plug. The pulsation damper is now ready for use.

Troubleshooting & maintenance

Trapped gas/air bubbles in the pulsation damper can increase pressure pulsation and, in turn, baseline noise. Bubbles may be introduced during installation, solvent changes, or when reconnecting fluidic connections. Check the pulsation damper periodically and purge it if bubbles are present (repeat steps 1–4 from the previous paragraph).

Specifications

Table 1. - Specifications PEEK pulse damper (pn 255.0035)

General	
Dimensions (L x W x D)	11.0 cm (4.3") x 6.4 cm (2.5") x 3.0 cm (1.2")
Weight	0.2 kg
Ambient conditions	15 - 35 °C (59 - 95 °F), air humidity below 90%,
Damper characteristics	
Intended use	Reduction of pump pulsations by means of a compressible fluid in an HPLC/IC system
Operating pressure	34 - 400 bar (500 - 5800 psi)
Internal volume	4.4 mL (passive), 900 nL (active dead volume)
Wetted materials	PEEK (Polyether ether ketone)
Exterior	Anodized 6061 aluminum alloy, laser engraved
Fluidic connections (I/O)	1/16" OD PEEK tubing with 10-32 PEEK fingertight

Using the PEEK pulsation damper outside its intended scope or specifications may lead to damage of the device.



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