HamiltonBuhl 21493-130

Hamilton PEEK Guard Column Starter Kit User Manual

Model: **21493-130**

Brand: **HamiltonBuhl**

1. Introduction

This manual provides essential information for the proper installation, operation, and maintenance of the Hamilton PEEK Guard Column Starter Kit. This kit is designed for laboratory use, specifically to protect analytical chromatography columns from particulate matter and strongly retained compounds, thereby extending the lifespan and improving the performance of your analytical column.

Please read this manual thoroughly before using the product to ensure safe and efficient operation.

2. Safety Information

Adherence to the following safety guidelines is crucial for safe operation and to prevent damage to the product or injury to personnel.

- This product is **for laboratory use only**. It is not suitable for medical, diagnostic, or human use.
- Always wear appropriate personal protective equipment (PPE), such as safety glasses and gloves, when handling chemicals or operating laboratory equipment.
- Ensure proper ventilation when working with solvents.
- Do not exceed the pressure limits specified for PEEK (Polyether Ether Ketone) components, typically up to 6,000 psi (413 bar), though specific system limits may vary.
- Avoid overtightening PEEK fittings, as this can damage the threads or ferrules. PEEK fittings are designed for finger-tight connections.
- Dispose of waste materials and used components according to local regulations.

3. Product Overview

The Hamilton PEEK Guard Column Starter Kit typically includes the necessary components to assemble and integrate a guard column into your liquid chromatography system. These components are made from PEEK, a chemically inert and biocompatible polymer, suitable for a wide range of chromatographic applications.

A typical kit contains:

- PEEK Guard Column Body: The housing for the guard column cartridge or frit.
- PEEK Frits/Filters: Porous discs that act as filters to prevent particulate matter from entering the analytical column.
- PEEK Fittings: Connectors (e.g., nuts and ferrules) used to secure the guard column into the fluid path.

Figure 1: Example components of a PEEK guard column kit, showing a PEEK fitting and two PEEK frits.

4. Setup

Follow these steps to properly set up your PEEK Guard Column:

1. **Unpack Components:** Carefully remove all components from the packaging and inspect them for any visible damage.
2. **Assemble Guard Column (if applicable):** If your kit includes a separate guard column body and frits, insert the appropriate frit into the designated end of the guard column body. Ensure it is seated correctly.
3. **Connect to System:** Identify the inlet and outlet ports on your chromatography system where the guard column will be installed. Typically, the guard column is placed between the injector and the analytical column.
4. **Attach Fittings:** Use the provided PEEK fittings (nuts and ferrules) to connect the guard column to the tubing of your chromatography system. Slide the nut and ferrule onto the tubing, then insert the tubing into the guard column port until it bottoms out.
5. **Tighten Connections:** Finger-tighten the PEEK nuts. PEEK fittings are designed to seal effectively with minimal torque. Overtightening can deform the ferrule or strip the threads, leading to leaks or damage.
6. **Flush System:** Before running samples, flush the system with an appropriate solvent to ensure all air is removed and to check for leaks. Observe pressure readings to confirm proper flow.

5. Operating Instructions

Once installed, the PEEK guard column operates as an integral part of your chromatography system. It functions by filtering the mobile phase and sample before they reach the more expensive analytical column.

- **Flow Direction:** Most guard columns are designed to be bidirectional, but always confirm with specific product documentation if a flow direction is indicated.
- **Pressure Monitoring:** Regularly monitor the system pressure. A significant increase in back pressure over time is often an indication that the guard column or its frit is becoming clogged and requires maintenance or replacement.
- **Chemical Compatibility:** Ensure that the mobile phases and samples used are compatible with PEEK material. While PEEK is highly resistant to many common solvents, strong acids (e.g., concentrated sulfuric acid) and certain halogenated solvents can degrade it over time.

6. Maintenance

Regular maintenance of your PEEK guard column will ensure optimal performance and extend the life of your analytical column.

- **Inspection:** Periodically inspect the guard column and fittings for any signs of wear, damage, or leaks.
- **Frit Replacement:** The frits within the guard column are consumable items. Replace them when you observe a significant increase in system back pressure, or if chromatography performance degrades (e.g., peak broadening, tailing, or loss of resolution). The frequency of replacement depends on sample cleanliness and mobile phase quality.
- **Cleaning:** If the guard column itself becomes contaminated, it may be possible to flush it with a strong solvent compatible with both the column packing (if applicable) and PEEK. Always follow recommended cleaning procedures for your specific guard column type.
- **Storage:** When not in use, store the guard column properly capped and filled with an appropriate storage solvent to prevent drying out or contamination.

7. Troubleshooting

This section provides solutions to common issues encountered with PEEK guard columns.

Issue	Possible Cause	Solution
Leakage at connections	Improperly tightened fitting, damaged ferrule, cross-threaded connection.	Ensure fittings are finger-tight. Inspect ferrule for damage and replace if necessary. Re-thread carefully.
High system back pressure	Clogged frit or guard column, particulate matter in tubing.	Replace the frit. If pressure remains high, replace the guard column. Flush tubing to remove blockages.
Poor chromatography (e.g., peak broadening, tailing)	Guard column overloaded or contaminated, incorrect installation.	Replace the guard column. Verify correct installation and flow path.
No flow or very low flow	Completely blocked frit or guard column, severe blockage in tubing.	Immediately stop pump. Disconnect guard column and check for blockages. Replace if necessary.

8. Specifications

Key specifications for the Hamilton PEEK Guard Column Starter Kit:

Specification	Detail
Item Model Number	21493-130
Manufacturer	Hamilton
ASIN	B00LHJ8OYW
Date First Available	July 3, 2014
Material	PEEK (Polyether Ether Ketone)
Typical Pressure Limit	Up to 6,000 psi (413 bar) for PEEK fittings (system dependent)

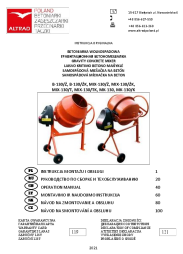
9. Warranty Information

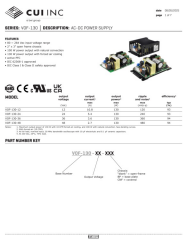
Specific warranty details for the Hamilton PEEK Guard Column Starter Kit are not included in this manual. For comprehensive warranty information, please refer to the official HamiltonBuhl website or contact their customer service directly.

10. Support and Contact Information

For technical support, additional product information, or to inquire about replacement parts, please visit the official HamiltonBuhl website or contact their authorized distributors. Contact details can typically be found on the manufacturer's website.
Website: HamiltonBuhl Store on Amazon

Related Documents - 21493-130

	VTOMAN V8 Pro Jump Starter User Manual - Epower-130 Comprehensive user manual for the VTOMAN V8 Pro Jump Starter (Model Epower-130), covering features, operating instructions, charging, safety warnings, and specifications.
	PMK SKID Positioning Systems and 3D Positioners - Product Manual Comprehensive guide to PMK's SKID positioning systems and 3D positioners for PCBA testing and debugging. Includes features, specifications, assembly, and ordering information.
	VTOMAN V8 Pro Jump Starter User Manual (Model Epower-130) Detailed user guide for the VTOMAN V8 Pro Jump Starter (Model Epower-130). Learn about its features, how to charge it, jump start a vehicle, use its various output ports, and understand safety precautions. Includes specifications, FAQ, and package contents.
	ALTRAD Gravity Concrete Mixer Manual - Operation and Maintenance Comprehensive manual for ALTRAD gravity concrete mixers, including models B-130/Ż, B-130/ŻK, MIX-130/Ż, MIX-130/ŻK, MIX-130/T, MIX-130/TK, MK-130, and MK-130/K. Covers assembly, operation, safety, maintenance, and troubleshooting.

	[CUI INC VOF-130 Series AC-DC Power Supply Datasheet] Technical datasheet for the CUI INC VOF-130 series of AC-DC power supplies. Features include wide input voltage range, open-frame chassis, 100W to 130W output power, and compliance with safety standards.
	[UDEL® Polysulfone Design Guide | Solvay Advanced Polymers] Comprehensive design guide for UDEL® polysulfone from Solvay Advanced Polymers, detailing material properties, applications, and processing for engineers.