

Care and Use of Axia Packed Preparative HPLC Columns

 **IMPORTANT**
Axia Packed Columns Under Pressure.
See back for important information.



Axia Packed preparative HPLC columns from Phenomenex are individually packed with state-of-the-art packing media using Hydraulic Piston Compression (HPC™) technology and performance is certified prior to shipment.



Upon Receipt Of The Column:

- Verify that the column you received is the column you ordered.
- Check the column for physical damage that may have occurred during shipping.
- Read the "Column Protection Guide" and any other information enclosed before using the column.
- Read the Warranty Information. Should you have any questions regarding the interpretation of your test results, please contact Phenomenex or your local dealer immediately.
- Test the column to verify performance. This is particularly important if the column is to be placed in storage, since the warranty period begins on the date of receipt of the column.

Specific Warranties On HPLC Columns

Phenomenex warrants its quality columns in accordance with the following terms and conditions. Phenomenex will repack, replace, or refund charges on any column (at our discretion), at no cost if a column fails to perform satisfactorily. Columns being returned must have prior return authorization granted by Phenomenex. Defective products must be accompanied by a written explanation of failure. Approval is subject to the following exclusions:

- All columns must be tested upon receipt and all deficiencies must be reported to Phenomenex no later than 15 days after the date of receipt of the column.
- Maximum warranty period is limited to 90 days unless previously agreed upon. However, COLUMNS MAY NOT BE RETURNED FOR REFUND OR CREDIT AFTER 45 DAYS AND WITHOUT PRIOR AUTHORIZATION.

- Removal of HPLC column endfittings automatically voids column warranty.
- Column performance warranty is limited to the conditions of the original test chromatogram.
- Physical damage to the column due to misuse, abuse or mishap, including mechanical shock.
- Chemical damage to the stationary phase or support material due to operation at incorrect chemical conditions, temperatures, or pressures.



PREP and DAC Scale Up Calculators

Quickly and easily scale-up your analytical columns to larger preparative columns up to 50mm ID or dynamic axial compression (DAC) columns up to 1000mm ID.

www.phenomenex.com/ScaleUp



IMPORTANT

Axia™ Packed Columns Under Pressure

DO NOT attempt to open the Axia Packed preparative HPLC column.

Doing so will invalidate the warranty. Axia Packed columns are packed using Phenomenex HPC™ technology, involving the use of a piston to maintain a uniform media packing density throughout the column. If the column is opened, the media

will relax and some will escape from the column. In addition, lacking the proper tools, the piston will not be able to be resealed properly within the Axia Packed column, which will render the column inoperative.

 Phenomenex products are available worldwide

www.phenomenex.com/mysupport

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Axia column and packing technology is patented by Phenomenex. U.S. Patent No. 7, 674, 383

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QUALITY
MANAGEMENT SYSTEM
CERTIFIED BY DNV GL
= 9001:2008 =

Column Care

To maintain superior performance throughout use, the following procedures are recommended.

Storage

When the Axia™ Packed column is not in use it is important to completely remove all buffers, acids, bases or other mobile phase additives to prevent physical damage to the media. Preparative HPLC systems can be programmed to automatically deliver at least 10 column volumes of 50:50 acetonitrile and water after the last sample is purified.

If the Axia Packed column is removed from the instrument for storage, then the column end plugs that were originally shipped with the column should be placed back in the endfittings to ensure that the packing media does not dry out.

Column Dimension (mm)	Approximate Column Volume (mL)
50 x 21.2	12
75 x 21.2	18
100 x 21.2	24
50 x 30	24
75 x 30	36
100 x 30	48
150 x 21.2	53
50 x 50	67
250 x 21.2	88
100 x 50	134
250 x 50	490

Flow Direction

The inlet end is on the longer endfiting with the black cap. Axia Packed columns have frits at both ends. See the column cleaning section for directions for reverse flushing the column.

Solvent Purity

Sample and solvent impurities very often contribute to reducing column lifetime. These impurities and particulates are very common and, if not removed from the solvent, will partially block the column inlet frit, degrading the separation. To maintain optimal column performance, it is recommended that only HPLC grade solvents and reagents be used. All solvents and buffers should be filtered through a 0.45-micron filter prior to use.

Guard Column Recommended

Preparative HPLC column lifetime is compromised by the physical and/or chemical coating of the media with sample components that cannot be flushed off the column. These contaminants will cause a change in retention time and/or change in peak shape due to the modification of the column media. To prevent media contamination it is recommended that a SecurityGuard™ PREP guard cartridge system (see below for part numbers) be used between the sample injector and the Axia Packed column. These SecurityGuard guard cartridge columns have two frits and the same media that is contained in the Axia Packed column. The guard column media will capture most of the compounds that irreversibly adsorb onto the media. This contamination cannot be removed from the column even when flushed with 100 % organic solvent. In routine use, the backpressure should be monitored, and when it increases beyond 100 psi (7 bar) the guard column cartridge should be replaced. In many situations, this is routinely done every 100 samples but, again, this is very dependent on sample matrix. When a SecurityGuard PREP guard column is used, the in-line filter is not required.

In-line Filter Recommended

Column lifetime is also reduced by particulates or precipitates blocking the inlet frit. A PREP column in-line filter (P/N AF0-7866) placed between the sample injector and column helps prevent any particulates from blocking the column frit and can be replaced periodically. The column backpressure should be monitored routinely and when it increases more than 100 psi (7 bar) the filter should be removed and replaced (P/N AF0-7867). Changing the filter disk when the pressure begins to increase ensures that the particulates will not migrate through the in-line filter to the column frit. Replacement frequency of the filter is very dependent on sample matrix and potential precipitants in the mixture.

Sample Clean up

Lifetime of the Axia Packed column is dependent on avoiding fouling of the column frits or media. Therefore, it is recommended that all samples be filtered through a 0.45 micron filter to ensure that all particulates are removed prior to injection onto the column. This will remove the particulates that are not soluble in 100% DMSO or 50:50 DMSO:CH₃OH, but may not prevent any of the sample components from precipitating (crashing out of solution) when injected into highly aqueous mobile phases.

Cleaning The Column

Lower or reduced column performance may be due to contamination of the media. To remove contamination from the column media, remove the guard column or guard pre-filter from the system and reverse flush the column with 10 column volumes of pure water and then 10 column volumes of 100 % organic solvent. Under extreme conditions the column can be flushed with 10 column volumes of 100 % THF (or IPA) followed by 100 % CH₂Cl₂. After cleaning, the column should be washed with 100 % THF (or IPA) and then returned to the acetonitrile/water 50:50 mixture prior to equilibrating the column with the starting mobile phase containing buffers, acids or bases.

For ion exchange, chiral and normal phase column cleaning procedures contact your local Phenomenex representative.

Performance Tracking

To ensure optimal column performance, the column plate count and symmetry should be monitored routinely and recorded in the log. This is easily accomplished by running a standard sample each morning without guard column or guard filter present. It has also been proven useful to monitor the change in performance with the guard column or pre-filter in-line with the column to determine if the column performance is degraded by their presence. If performance has degraded, then the guard column or pre-filter should be replaced before the preparative HPLC system is placed on-line for the day.

Operating Conditions

pH Limitations

The pH limitations for Axia Packed columns is dictated by the media packed in the column.

Media	pH Range
Kinetex® C18, XB-C18, C8, Biphenyl, Phenyl-Hexyl	1.5 – 10*
Kinetex HILIC	2.0 – 7.5
Kinetex EVO C18	1 – 12
Aeris™ PEPTIDE XB-C18	1.5 – 10*
Luna® C18(2), C8(2) and Phenyl-Hexyl	1.5 – 10*
Luna Omega Polar C18 and PS C18	1.5 – 10*
Synergi™ Max-RP and Fusion-RP	1.5 – 10*
Synergi Hydro-RP, Clarity Oligo-XT	1.5 – 7.5
Synergi Polar-RP	1.5 – 7
Gemini® C18, NX-C18 and C6-Phenyl	1 – 12
Lux®	2 – 9
Jupiter® C18	1.5 – 10*
Clarity® Oligo-RP™, Clarity Oligo-XT	1 – 12
Clarity Oligo-WAX™	1 – 11

*pH range is 1.5-10 under isocratic conditions. pH range is 1.5-9 under gradient conditions.

Backpressure Limitations: 5000 psi (330 Bar)

Flow Rate Limitations

Determined by viscosity of mobile phase; flow rates should be controlled such that the backpressure limit of 5000 psi (330 Bar) is not exceeded.

Supercritical Fluid Chromatography (SFC)

Axia packed columns provide the same purification capability and performance as the 4.6mm analytical screening columns. Please notify your Phenomenex representative if your Axia column will be used for SFC applications.

In-line Filter

To be used with or without guard column

Part No.	Description	Unit
AF0-7866	HPLC PREP Column In-Line Filter, SS, 2.0µm Porosity x 21.2mm diameter	ea

Guard Columns

Protect your Axia Packed column and prolong its lifetime with SecurityGuard, the advanced HPLC PREP guard cartridge system.

- Get full protection with minimal impact on your chromatographic results.
- Contaminants are retained by an inexpensive, disposable cartridge



For 21.2 mm ID cartridges, use with 18 to 29 mm ID columns

Part No.	Description	Unit
AJ0-8223	HPLC Holder Kit for 21.2 mm ID cartridges, includes column coupler	ea
AJ0-8617	SFC Holder Kit for 21.2 mm ID cartridges, includes column coupler	ea

For 30.0 mm ID cartridges, use with 30 to 49 mm ID columns

Part No.	Description	Unit
AJ0-8277	HPLC Holder Kit for 30.0 mm ID cartridges, includes column coupler	ea
AJ0-8617	SFC Holder Kit for 30.0 mm ID cartridges, includes column coupler	ea

SecurityGuard™ PREP Cartridges

Description	15 x 21.2 mm	15 x 30.0 mm	Unit
C18	AJ0-7839	AJ0-8301	ea
C8	AJ0-7840	AJ0-8302	ea
Phenyl	AJ0-7841	AJ0-8303	ea
C12 (for Synergi Max-RP)	AJ0-7842	AJ0-8304	ea
AQ C18 (for Synergi Hydro-RP)	AJ0-7843	AJ0-8305	ea
Fusion-RP	AJ0-7844	AJ0-8306	ea
Polar-RP	AJ0-7845	AJ0-8307	ea
Gemini NX-C18	AJ0-8370	AJ0-8371	ea
Gemini C18	AJ0-7846	AJ0-8308	ea
Gemini C6-Phenyl	AJ0-9157	AJ0-9158	ea
Silica (2)	AJ0-7229	AJ0-8312	ea
PFP(2)	AJ0-8377	AJ0-8378	ea
Core-Shell C18	AJ0-9145	AJ0-9204	ea
Core-Shell EVO C18	AJ0-9304	AJ0-9305	ea
Core-Shell C18 Peptide	AJ0-9318	AJ0-9319	ea
Core-Shell C8	AJ0-9205	AJ0-9217	ea
Core-Shell Biphenyl	AJ0-9272	AJ0-9273	ea
Core-Shell Phenyl-Hexyl	AJ0-9147	AJ0-9216	ea
Core-Shell HILIC	AJ0-9277	-	ea
Luna Omega Polar C18	AJ0-7603	AJ0-7604	ea
Luna Omega PS C18	AJ0-7608	AJ0-7609	ea
Lux i-Cellulose-5	AJ0-8634	AJ0-8635	ea
Lux Amylose-1	AJ0-9338	AJ0-9339	ea
Lux Amylose-2	AJ0-8473	AJ0-8474	ea
Lux Cellulose-1	AJ0-8405	AJ0-8406	ea
Lux Cellulose-2	AJ0-8400	AJ0-8401	ea
Lux Cellulose-3	AJ0-8624	AJ0-8625	ea
Lux Cellulose-4	AJ0-8629	AJ0-8630	ea
Oligo-RP	AJ0-8210	AJ0-8310	ea
Oligo-WAX	AJ0-8639	AJ0-8420	ea
Oligo-XT	AJ0-9517	AJ0-9518	ea

Please visit www.phenomenex.com/SecurityGuard for a complete list of SecurityGuard PREP cartridge part numbers.