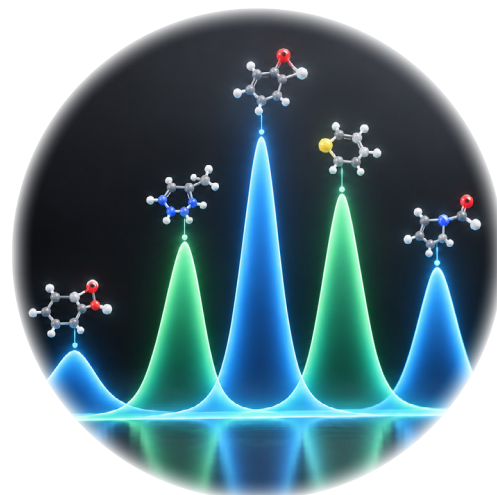


How To Guide:

Choosing The Right Shim-Pack Column



An Introduction To Column Selection

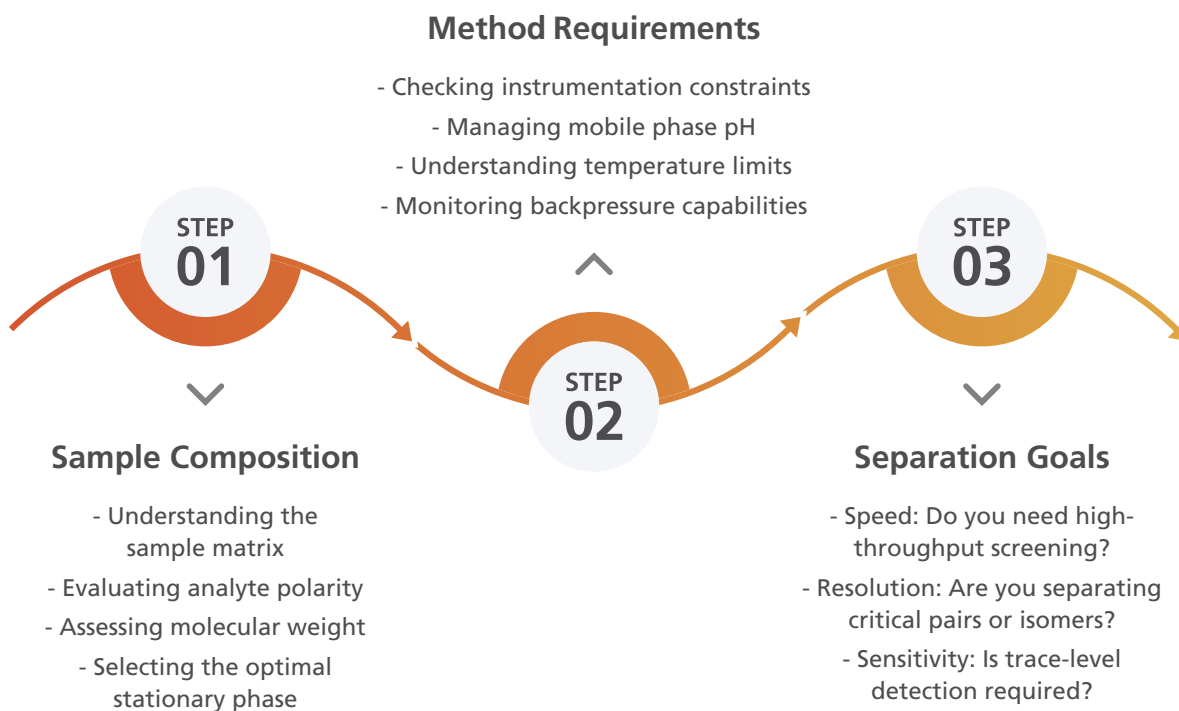
Selecting the right chromatography column comes down to matching your sample with your data goals. The ideal choice ensures consistent results, solves complex separations, and simplifies your workflow.

This guide removes the guesswork to help you achieve:



The Selection Framework In 3 Steps

Navigating the vast array of column options starts with defining your analytical goals.



Choosing The Right Column Dimensions

To achieve optimum separation results, it is critical to select column dimensions that align with your HPLC/UHPLC system hardware specifications. The following three fundamental column parameters can help to determine compatibility with an LC system:

- **Column length** – Increasing column length improves separation efficiency, but at the cost of higher column backpressure and longer analysis time. A shorter column with smaller particle size can be used to reduce analysis time while maintaining separation efficiency.
- **Column ID** – Small column ID can reduce solvent consumption. However, a small system delay volume is required to reduce peak broadening caused by diffusion. UHPLC are designed with small delay volume for use with small ID columns.
- **Particle size** – Smaller particle size improves separation efficiency. However, it also increase the column backpressure. UHPLC which have a high pump pressure tolerance is required to handle columns of 2µm or smaller.

Recommended Column Dimensions By LC System Type:

	Column Length	Column ID	Particle Size
Preparative LC	100 – 250 mm	10 – 20 mm	5, 10 µm
HPLC	100 – 250 mm	4.6 mm (3.0 mm)	2.7, 3, 5 µm
UHPLC-Like	50 – 100 mm	3.0 mm (2.1 mm)	2.7, 3 µm
UHPLC	≤150 mm	≤150 mm	1.6, 1.8, 1.9, 2, 2.2 µm

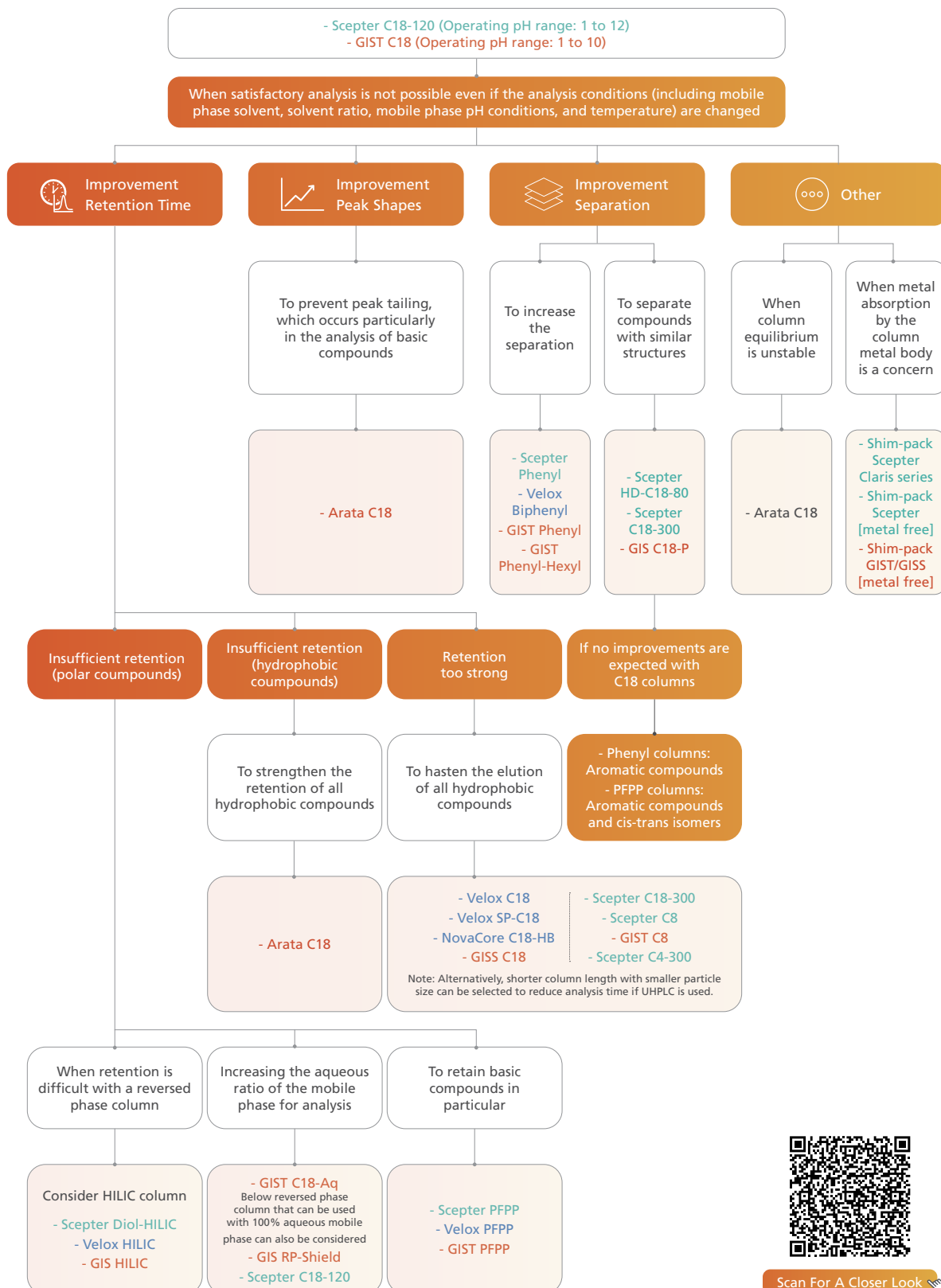


Decision Flow Chart To Select Column Type

● Fully porous silica columns ● Fully porous organic silica hybrid columns ● Surface porous silica columns (Core-shell silica columns)

First Choice Columns

If no prior reference for separation of target compounds is available, select this column as the starting choice.



Scan For A Closer Look

Discover Our Specialized Chromatography Column Families

Shimadzu offers a comprehensive portfolio of chromatography columns, each engineered to solve specific analytical challenges. Whether your priority is **speed, resolution, sensitivity, or durability**, our columns deliver the precision and reproducibility required for consistent, high-quality results.

Portfolio Overview

The table below highlights the key features, applications, and core products within each column family. Detailed product specifications and targeted application notes follow in the subsequent sections to guide your selection.

Column Family	Key Features	Applications
Shim-pack Scepter	Organosilica hybrid particle technology, high versatility with wide pH stability range, robust performance	Methods requiring high pH mobile phase, wide pH range expands the scope available for method scouting, scaling up or down between UHPLC and preparative LC.
Shim-pack NovaCore	Core shell technology with wide pH range, high performance with low column backpressure, high sensitivity with sharp peaks	High-speed analysis that require high pH mobile phase.
Shim-pack Velox Series	Core shell technology for high throughput, high performance with low column backpressure	For reducing analysis time and solvent consumption.
Shim-pack GIST/GISS/GIS	High purity silica, ultra-high inertness	Scaling up or down between UHPLC and preparative LC.
Shim-pack Arata	Exceptional peak shape for basic compounds, fast equilibration	Peptides, basic compounds.

Product Guide (1): Shim-pack Scepter Series

Maximum Flexibility. Seamless Scalability. Uncompromised Bio-Inertness.

The Shim-pack Scepter series introduces next-generation hybrid particle technology designed to overcome the limitations of conventional silica columns. By integrating organic groups into the silica matrix, these columns deliver exceptional chemical stability and robust performance across a broad spectrum of challenging applications.

C18-120 (L1)



Pore	pH	End-Cap
120Å	1-12	Yes

General purpose C18

- Wide pH range 1-12
- Excellent chemical stability
- High separation power

C18-300 (L1)



Pore	pH	End-Cap
300Å	1-12	Yes

Wide pore C18 for large molecules

- For large molecule (MW > 5,000)
- Oligonucleotide, large peptide and proteins

HD-C18-80 (L1)



Pore	pH	End-Cap
80Å	1-12	Yes

High density C18 for steric recognition

- Superior stereoselectivity
- Highly ultra-inert, high durability
- Wide pH range 1-12

C8-120 (L7)



Pore	pH	End-Cap
120Å	1-12	Yes

Reduced retention compared to C18

- Faster separation of hydrophobic compounds
- Higher bonded density than C18 columns
- Superior isomer separation

C4-300 (L26)



Pore	pH	End-Cap
300Å	1-10	Yes

For large protein analysis

- Separates diverse biomolecules
- Durable up to 90°C
- MS-friendly, good peak shapes

Phenyl-120 (L11)



Pore	pH	End-Cap
120Å	1-10	Yes

Separation of aromatics

- Strong hydrophobic and π - π interactions
- Unique selectivity for aromatic and conjugated compounds

PFP-120 (L43)



Pore	pH	End-Cap
120Å	1-8	No

Halogen and shape selectivity

- Multiple chemical interactions
- Effectively separates polar compounds
- High stability under 100% aqueous condition

Diol-HILIC (L20)



Pore	pH	End-Cap
120Å	2-10	No

Separation of highly polar analytes

- Ideal for a separating of polar and hydrophilic compounds
- Highly ultra-inert
- Avoid the need for ion-pairing reagents



Pharma analysis



Bioanalysis



Food / Cosmetics / Environment analysis

Product Guide (2): Shim-pack NovaCore & Velox Series

Shim-pack NovaCore

High-Speed, High-Resolution Analysis Without High Backpressure.

The Shim-pack NovaCore series redefines the boundaries of liquid chromatography by combining next-generation core-shell technology with an organic-inorganic hybrid base material. Engineered for labs demanding rapid, high-resolution separations, NovaCore columns maximize efficiency on both standard HPLC and advanced UHPLC systems with broad pH tolerance (1–12).

C18-HB (L1)					
Pore	pH	End-Cap			
100Å	1-12	Yes			

Hybrid Core-shell C18

- Wide pH range 1 – 12
- Fast analysis with low backpressure
- Separates strong ionic compounds

Shim-pack Velox Series

Universal Applicability. Max Hydrophobic Retention. Core-Shell Efficiency.

The Shim-pack Velox C18 is a general-purpose, reversed-phase column delivering the highest hydrophobic retention in the Velox series. Utilizing advanced core-shell technology, it provides high-resolution, high-speed separations for pharmaceutical, food, environmental, and clinical applications. Featuring a traditional end-capped phase, it is fully optimized for reproducible performance with moderately acidic to neutral mobile phases (pH 2–8).

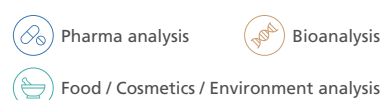
SP-C18 (L1)					
Pore	pH	End-Cap			
90Å	1-8	No			
Sterically protected C18					
<ul style="list-style-type: none">• Extended low pH stability• Balanced retention profile• Suitable for LC/MS analysis					

C18 (L1)					
Pore	pH	End-Cap			
90Å	2-8	Yes			
General purpose C18					
<ul style="list-style-type: none">• General purpose reversed-phase• High hydrophobic retention• Compatible with mobile phase pH 2 – 8					

Biphenyl (L11)					
Pore	pH	End-Cap			
90Å	1.5-8	Yes			
Separation of aromatics					
<ul style="list-style-type: none">• Complementary to alkyl phase selectivity• Enhanced separation of aromatic compounds• Increases LC/MS sensitivity & selectivity					

PFPP (L43)					
Pore	pH	End-Cap			
90Å	2-8	No			
Halogen and shape electivity					
<ul style="list-style-type: none">• Alternative selectivity to C18 column• Separates positional isomers & halogenated compounds• Increased retention for charged-bases					

HILIC (L3)					
Pore	pH	End-Cap			
90Å	2-8	No			
For highly polar analytes					
<ul style="list-style-type: none">• Orthogonal reversed-phase selectivity• Increased polar analyte retention• Higher MS sensitivity					



Product Guide (3): Shim-pack G Series

High Inertness. Diverse Selectivity. Cost-Effective Performance.

The **Shim-pack G Series (GIST, GISS, GIS, and GWS)** features fully porous, high-purity silica columns engineered for highly reproducible routine analysis. The flagship **GIST** provides high durability across a wide pH range (1–10), while the rapid-response **GISS** delivers sharp peaks optimized for fast LC/MS/MS workflows. For everyday testing, the **GIS** offers high retentivity with low backpressure, complemented by the economical **GWS** series for cost-effective, dependable quality control.

GIST C18 (L1)   		
Pore	pH	End-Cap
100Å	1-10	Yes
Expanded pH range		
<ul style="list-style-type: none"> • Superior inertness • Symmetric peak shapes even for strong ionic compounds • Suitable from analytical to preparative 		

GIST C18-AQ (L1, L96)  		
Pore	pH	End-Cap
100Å	1-10	Yes
Retention of highly polar analytes		
<ul style="list-style-type: none"> • Optimized C18 bonding group • Improved polar compound retention • Durable under 100% aqueous 		

GISS C18 (L1)   		
Pore	pH	End-Cap
200Å	1-10	Yes
Reduced retention for faster analysis		
<ul style="list-style-type: none"> • Low carbon load • Rapid, symmetrical peaks • High-speed LC/MS/MS analysis 		

GIS C18 (L1) 		
Pore	pH	End-Cap
100Å	2-7.5	Yes
General purpose C18		
<ul style="list-style-type: none"> • High-purity porous silica matrix • High loading capacity • Analyzes drugs, natural products 		

GIS C18-P (L1)  		
Pore	pH	End-Cap
100Å	2-7.5	No
Polymeric bonded C18		
<ul style="list-style-type: none"> • High steric selectivity • Separates planar/non-planar compounds • High carbon load, strong retention strength 		

GIS RP-Shield (L1)  		
Pore	pH	End-Cap
100Å	2-7.5	No
Polar embedded C18		
<ul style="list-style-type: none"> • Enables superior peak shape for acids • Unique hydrogen bonding selectivity • Durable under 100% aqueous 		

GWS C18 (L1)  		
Pore	pH	End-Cap
100Å	2-7.5	Yes
General purpose C18		
<ul style="list-style-type: none"> • General C18 column for HPLC analysis • Fast hydrophobic compound elution • Ideal for multi-analyte analysis with wide polarity ranges 		

GIST C8 (L7)   		
Pore	pH	End-Cap
100Å	1-10	Yes
Reduced retention compared to C18		
<ul style="list-style-type: none"> • High inertness • Effective separation of acidic and basic compounds with symmetrical peaks 		



Pharma analysis



Bioanalysis



Food / Cosmetics / Environment analysis



GIST Phenyl (L11)



Pore	pH	End-Cap
100Å	2-7.5	No

Separation of aromatics

- Suitable for aromatics, heterocyclic and electronegative compounds
- Improved retention of acidic and basic compounds

GIST Phenyl-Hexyl (L11)



Pore	pH	End-Cap
100Å	1-10	Yes

Higher hydrophobic retention than phenyl

- π - π interactions for improve aromatic selectivity
- Ideal for analysis of aromatics, heterocyclic and electronegative compounds

GIST PFPP (L43)



Pore	pH	End-Cap
100Å	2-7.5	Yes

Halogen and Shape Selectivity

- Better selectivity for polar, aromatic and halogenated compounds
- Combination of multiple interaction modes

GIST Amide (L68)



Pore	pH	End-Cap
100Å	2-8.5	No

HILIC Retention of Polar analytes

- Strong HILIC retention of polar compound
- High stability and durability
- Short column equilibration time

GIST NH2 (L8)



Pore	pH	End-Cap
100Å	2-7.5	No

Separation of aromatics

- Effective in separation of sugar, amino acids and polar compounds under HILIC mode
- Superior stability, reduced column bleed in weakly acidic eluents

GIS CN (L10)



Pore	pH	End-Cap
100Å	2-7.5	No

NP and RP Dual Separation Mode Capability

- Weak π - π and hydrogen bonding interactions
- Compatible with reversed and normal phase conditions
- Applicable in 100% aqueous conditions

GIS HILIC (L20)



Pore	pH	End-Cap
100Å	2-7.5	No

Separation of Highly Polar Analytes

- Dihydroxypropyl (Diol) bonded stationary phase
- Excellent peak shape for basic and neutral polar compounds

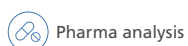
GIS SIL (L3)



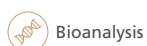
Pore	pH	End-Cap
100Å	2-7.5	No

Normal phase separation

- High-quality pure silica gel
- Compatible with normal phase
- Strong basic compound retention



Pharma analysis



Bioanalysis



Food / Cosmetics / Environment analysis

Product Guide (4): Shim-pack Arata Series

Shim-pack Arata Series

Exceptional Peak Shape. Increased Sensitivity. Rapid Equilibration.

The **Shim-pack Arata** eliminates common analytical challenges such as distorted peak shapes for acidic samples or poor resolution for highly polar basic compounds. With Shim-pack Arata, it delivers exceptionally sharp peak shapes for basic compounds even when using low-strength acidic mobile phases. Plus, its ultra-fast column equilibration effectively reduces system stabilization time to ensure reliable, highly reproducible data.

Arata C18 (L1)				
Pore	pH	End-Cap		
120Å	2-7.5	Yes	Superior Peak Shape for Basic Compound	
			<ul style="list-style-type: none">• Good peak shape for basic compounds• Ideal for basic compound analysis• Rapid equilibration and stable under 100% aqueous condition	



Pharma analysis



Bioanalysis

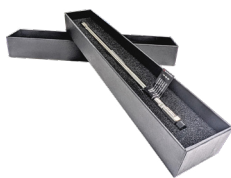


Food / Cosmetics / Environment analysis



More Than Just Columns: Daily Essentials For Your Lab

From sample preparation to final detection, your results depend on the integrity of your entire workflow. Shimadzu's comprehensive range of consumables ensures exceptional reproducibility, extended column lifetimes, and minimized system downtime.



ShimOMNIA Chiral Columns

Achieve ultimate resolution for challenging enantiomeric separations with our advanced chiral stationary phases.



Mobile Phase Cleaners

Protect your system and eliminate ghost peaks with inline purification solutions designed for high-sensitivity workflows.



High Quality Vials & Closures

Ensure sample integrity and prevent evaporation with certified, low-extractable glass vials tailored for high-throughput autosamplers.



QuEChERS & SPE Sample Prep

Streamline clean-up, minimize matrix interference, and maximize analyte recovery for complex food, environmental, and biological samples.



Syringe Filters

Extend column longevity and prevent particulate clogging with our chemically resistant, low-protein-binding filtration solutions.



Everything you need for your daily liquid chromatography workflows is just a click away. Explore our full catalog, check real-time stock availability, and streamline your procurement. Visit us at shopshimadzu.com



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