

Shimadzu Packed Column for HPLC

CoreFocus

Shim-pack™ GPC-800 Series

INSTRUCTION MANUAL

■ Introduction

The Shim-pack GPC-800 series are columns for gel permeation chromatography of polymers, oligomers, and organic compounds using organic solvent systems. The Shim-pack GPC-800 series has two types with the following solvent compatibility:

- 800 series : Tetrahydrofuran (THF)
- 800D series : Dimethylformamide (DMF)

■ Column Performance

- To ensure quality and consistency, each column is individually tested before shipping.
- A performance report is included with each column. Refer to Tables 1 and 2 on page 2 of this sheet for the guaranteed number of theoretical plates for each column in the series.

■ Column Material

- The Shim-pack GPC-800 stationary phase is a spherical, porous gel made from a styrene-divinylbenzene copolymer and packed in stainless-steel hardware with an inner diameter of 8 mm and a length of 300 mm.
- Shim-pack GPC-800 series columns are shown in Tables 1 and 2. Please select according to the MW range of the target analytes.

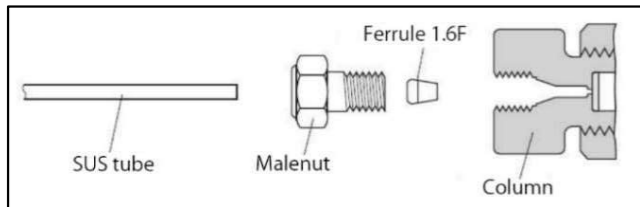
■ Column Installation

- The following parts are required for column connection from the injector or guard column.

Description	Part number	Number required
Male Nut 1.6MN (ea)	228-16001-84	2
Ferrule 1.6F (ea)	228-16000-17	2
PIPING ASSY,0.3 x70 mm*	228-69956-41	1

*This pipe is used to connect two columns in series or to connect the guard column to the analytical column.

- Connect the column as shown in the figure below.



- Do not overtighten the nut. It may cause damage to the column inlet fitting.

■ Mobile Phase

- The mobile phase is typically the same as the shipping solvent.
- Chloroform, toluene, and methylene chloride can also be used for THF type columns. Refer to the solvent exchange instructions below when a solvent different from the shipping solvent (contained in a new column) is required for analysis with the Shim-pack GPC series.

https://www.shimadzu.com/an/products/liquid-chromatography/hplc-consumables/shim-pack-gpc-series/features.html#anchor_1



- Before analysis, filter the mobile phase and sample using a 0.2-0.45 µm membrane compatible with the mobile phase to prevent particulate buildup on the column.
- Use HPLC grade (or higher) solvents for mobile phase preparation.

■ Column Handling Precautions

- Use the specified connection parts from the “Column Installation” section.
- The flow direction is shown with an arrow on the column label (→). When installing the column, ensure that the mobile phase flow direction matches the direction on the column.
- Multiple columns can be connected in series. Maximum operating pressure per column is 3.5 MPa/35 bar/500 psi.
- Avoid extreme pressure fluctuations which may cause premature column degradation. Note that both a manual injector and an autosampler may increase pressure momentarily when the valve turns to inject sample.
- Recommended flow rate is 1.0 mL/min or less.
- The maximum usable flow rate is 2.0 mL/min for 800 series and 1.5 mL/min for 800D series.
- For 800D series columns, analysis at 40-60 °C is recommended.
- Do not use GPC-800 series columns above 60°C.

Column	Recommended flow rate (mL/min)	Maximum flow rate (mL/min)	Maximum pressure (MPa)	Maximum temperature (°C)
GPC-800 series	0.5 ~ 1.0	2.0	3.5	60
GPC-800D series	0.5 ~ 1.0	1.5	3.5	60

- The shipping solvent is THF for the 800 series and DMF for the 800D series.
- Use a dedicated guard column to prevent contamination.
800 series : Shim-pack GPC-800P (P/N 228-20812-91)
800D series : Shim-pack GPC-800DP (P/N 228-20812-93)

■ Column Storage

- When storing the column for a short time, fill the column with the last-used mobile phase and securely plug both ends. Store at ambient temperature in a laboratory drawer or cabinet.
- For long-term storage, flush the column with mobile phase and replace monthly. This keeps the stationary phase from drying out and maintains optimal performance.

■ Technical Support

Shimadzu offers technical support for customers who need to help. Contact your local representative or a nearby Shimadzu sales office if needed.

Table 1 [800 series (THF type)]

Column	P/N	Minimum theoretical plate number	Exclusion limit MW (polystyrene)	MW range of target analytes	Analyte type
GPC-801	228-20803-91	18,000	1.5 x 10 ³	100 - 700	low MW organics
GPC-802	228-20804-91	18,000	5 x 10 ³	300 - 3,000	low MW organics, oligomers
GPC-8025	228-20805-91	18,000	2 x 10 ⁴	300 - 8,000	oligomers
GPC-803	228-20806-91	18,000	7 x 10 ⁴	1,000 - 50,000	oligomers, polymers
GPC-804	228-20807-91	18,000	4 x 10 ⁵	7,000 - 300,000	polymers
GPC-805	228-20808-91	11,000	4 x 10 ⁶	50,000 - 2,000,000	polymers
GPC-80M	228-20810-91	13,000	*(2 x 10 ⁷)	1,000 - *(20,000,000)	MW distribution measurement (Mixed gel)

*() Estimated value

Table 2 [800D series (DMF type)]

Column	P/N	Minimum theoretical plate number	Exclusion limit MW (PEG / PEO)	MW range of target analytes	Analyte type
GPC-801D	228-20803-93	17,000	2.5 x 10 ³	100 - 1,500	low MW polar organics
GPC-802D	228-20804-93	17,000	7 x 10 ³	200 - 4,000	low MW polar organics
GPC-8025D	228-20805-93	17,000	2 x 10 ⁴	400 - 10,000	polar oligomers
GPC-803D	228-20806-93	17,000	7 x 10 ⁴	1,000 - 50,000	polar oligomers, polar polymers
GPC-804D	228-20807-93	17,000	2 x 10 ⁵	4,000 - 200,000	polar polymers
GPC-805D	228-20808-93	11,000	*(4 x 10 ⁶)	30,000 - *(4,000,000)	polar polymers
GPC-806D	228-20809-93	11,000	*(4 x 10 ⁷)	30,000 - *(40,000,000)	polar polymers
GPC-80MD	228-20810-93	13,000	*(4 x 10 ⁷)	1,000 - *(40,000,000)	MW distribution measurement (Mixed gel)
GPC-807D	228-20811-93	6,000	*(2 x 10 ⁸)	50,000 - *(200,000,000)	polar super-polymers

*() Estimated value

※ The contents of this instruction sheet are subject to change without notice.