

## Guard Column for Ultra High Performance Packed Column

Shim-pack

### GIST/GISS/GIS -HP (G) Series

## INSTRUCTION MANUAL

### ■ Introduction

This product is manufactured for the purpose of protecting analytical columns from contaminants in samples and eluents.

This cartridge type provides easy installation and replacement. Please read the following instructions before use.

This product contains Holder A, Holder B, Tubing (0.18 mm I.D. x 20 mm), male nut and ferrule.

### ■ Operating Precautions

Check if anything is missing or damaged. If there are any signs of damage, notify your local Shimadzu representative at once.

### ■ Column Installation

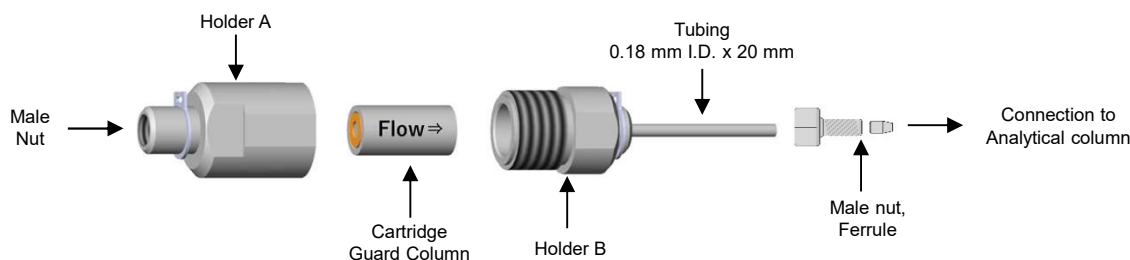
Refer to the following instructions to install the Guard Columns for UHPLC properly.

1. Check the flow direction of the cartridge guard column, and then insert the cartridge into the holder B.
2. Hand-tighten the holder until it no longer turns easily. Retighten the holder from 60 to 90 degrees by using a 10 mm spanner.
3. Connect the inlet set of the holder prepared at step 3 to the outlet side of the injector.

Besides the male nuts for the analytical column, another set of male nuts are necessary to connect the Cartridge Guard Column. Ensure that the fittings are connected properly to avoid creating dead volume between the tubing and the guard column interface. Male nuts can be ordered by referring to the part number below.

Use a 0.1 - 0.25 mm I.D. tubing to minimize extra column volume. Use the shortest possible tubing connection to minimize extra column volume.

Item name	P/N	Remarks	Pressure
Male nut 1.6 MN	228-16001	1 pc	130 MPa
Ferrule 1.6 F	228-16000-10	1 pc	130 MPa
UHPLC Fitting 2 S	228-56867-41	1 pc	130 MPa



Column Connection

4. Use a 10 mm spanner to connect the guard column to the analytical system.
5. This product is shipped under dry conditions and contains air bubbles. Make sure to remove air bubbles from the cartridge before use. Set the flow rate to 0.1 - 0.2 mL/min for 1.5 mm I.D., 0.2 - 0.4 mL/min for 2.1 mm I.D., and 0.4 - 0.8 mL/min for 3.0 mm I.D. guard columns.
6. To connect the guard column to the analytical column after confirming air bubbles are completely removed, tighten the male nut or UHPLC fitting by using a spanner. The size of the tubing attached to the outlet side is 20 mm x 0.18 mm I.D.

#### Attention

Shape of the column joint is a lot of variation (HSS type, Waters type) depending on the kind of column. It might be the case that the combination of the column joint have negative influence on the separation. Therefore, pay attention to the points below when use the ferrule and the male nut.

- In the case of using the male nut and ferrule enclosed in the box, please tighten these with use of column which will be connected with after insert the male nut and then the ferrule in the tubing.
  - In the case of using various vender's column, recommend to use the UHPLC fitting (S228-56867-41) which the position for tighten can be freely moved in order to avoid the dead volume as long as it can. UHPLC fitting is not including in this product. UHPLC fitting can be ordered separately.
7. Flush the column with mobile phase and inspect for leaks. In case of any leakage, check all connections and retighten the holder using a 10 mm spanner.

## ■ Column Handling Precautions

To maximize column life operate at pressures below 80 MPa.

## ■ Storage of Columns

When storing the guard column for a long period, remove the cartridge from the holder and store it under dry conditions.

Store the guard column/holder/cartridge in a cool and dark place.

## ■ Technical Support

This product is manufactured, inspected, packaged and shipped under strict standards of quality control. Should you find any defect in performance, please contact your local Shimadzu representative, who will ensure your complete satisfaction.

We regret that we cannot guarantee the lifetime of columns, also that we cannot accept any claim when performance has deteriorated due to noncompliance with the operation procedures elucidated above, or as a result of normal aging.