

## L-column series Instruction Manual (Common to the series)

Thank you for purchasing *L-column* series.

To ensure sufficient performance of this product and its long-term use, please read and understand this instruction manual thoroughly before using the product. The product is shipped after strict performance check. Handle the product with sufficient care. Any shocks such as dropping or striking to the product may result in damage to its structure and performances.

Please note that we cannot guarantee against any damage, deterioration or the lifetime of this product if it is caused by any use that fails to heed the precautions of this instruction manual.

Instruction Manual

- Read this manual well to be thoroughly familiar with the contents before using this product so that you can use it correctly. Observe instructions when using the product.
- After reading this manual, keep it carefully.
- Please contact us if you have any questions on using the product.
- Please note that the content of the description of this manual might be changed without notice for future improvement.
- No part of this manual may be reproduced, stored, or transmitted without prior permission.

### 1. Package contents

As soon as the products are delivered to you, please check that there are no defects or damage to the package, and check that you have received the correct type of *L-column* you have ordered.

Package contents

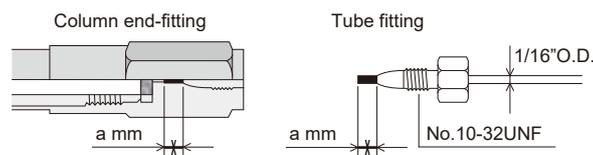
- Column
- Instruction Manual
- Test report \*1

### 2. Serial number

A serial number is given to every column, which is inspected for thorough quality control (excluding some consumables).

How to read the serial number	A1234 567 -W
Lot number of the packing material	Type of connection and structure
Number given to each column in the packing material lot	

Type of connection and structure	"a" length
W : Waters type	3.5 mm
S : Shimadzu type	2.3 mm
U : UPLC® type	2.3 mm
P : PEEK-sleeved type	2.3 mm



Most of the commercially available LC columns and LC system tubing use the 1/16" O.D. screw No. 10-32UNF. Type of connection is identified by the difference in the length of the tubing ahead of the ferrule ("a" length in the above figures: actual measurement value).

### 3. Connecting to LC tubing

Please make sure that the type of the connection of the column and that of the LC system tubing are the same, or that the tubing has been inserted into the deep end of the column end-fitting when using the tube fitting equipped with the adjustable length tubing ahead of the ferrule. Observe the other precautions below.

- Make sure that the tip end of the tube forms a right angle, and has not crushed before use.
- Connect the column in the flow direction shown by the arrow described on the column label.
- Use the LC system that fits the inner diameter of the column.

### 4. Precautions when using a new column for the first time

Column is shipped in the mobile phase shown in the test report. When feeding a mobile phase, make sure that the compatibility of the solvents as well as salt precipitation.

### 5. Sample

Dissolve the sample in the solvent having the same composition as the mobile phase as possible. Use of the sample solvents having higher solubility than the mobile phase may result in poor separation performance and sample precipitation at the column inlet. It is recommended that the sample solution is filtered with 0.45- $\mu$ m or lower membrane filter (or membrane filter having smaller pore diameter than 1/10 of the packing particles) to prevent clogging of the column.

### 6. Mobile phase

Most of the solvents used in the silica-based reversed phase HPLC can be used<sup>\*2</sup> as the mobile phase. Usable pH ranges of the mobile phase are shown below. Column lifetime may be shortened in cases where the mobile phase pH is higher than 7 with low organic content or where highly concentrated salt is added in it. After using the column, substitute and clean using mobile phase without salts.

Product name	Usable pH range
<i>L-column3 C18, L-column3 C8</i>	pH 1 - pH 12
<i>L-column2 ODS</i>	pH 1 - pH 9
<i>L-column ODS, L-column ODS-P</i>	pH 2 - pH 9
<i>L-column2 C8, L-column2 C6-Phenyl</i>	pH 2 - pH 7.5
<i>L-column C8</i>	pH 2 - pH 7.5

### 6.1 Substitution of mobile phase in column and column cleaning

The mobile phase in the column can be substituted by delivering approximately ten column volumes of the objective mobile phase. Reduce the flow rate to one-half of the normal one to prevent rapid change in the column pressure. Prevent severe change in polarity and compatibility, as well as precipitation of residues derived from salts in the sample when substituting the mobile phase and cleaning column.

### 6.2 Column pressure<sup>\*3</sup>

Use the following pressure table as a guideline for the maximum pressure limit for columns.

Inner diameter	Length	Particle size		
		5 $\mu$ m	3 $\mu$ m	2 $\mu$ m
Less than 0.3 mm	50 mm	10 MPa	20 MPa	40 MPa
	150 mm	15 MPa	25 MPa	60 MPa
	500 mm	-	40 MPa	-
Less than 6.0 mm	10 mm	-	10 MPa	10 MPa
	20 mm	-	20 MPa	20 MPa
	30 mm - 50 mm	10 MPa	20 MPa	40 MPa
	75 mm - 100 mm	15 MPa	25 MPa	60 MPa
	150 mm	15 MPa	25 MPa	80 MPa
More than 10.0 mm	250 mm	20 MPa	30 MPa	-
	50 mm - 250 mm	10 MPa	10 MPa	-
High Pressure type (HP)			50 MPa	

### 6.3 Precautions for use

When high water content mobile phases (90% or more) are used, extreme change in the retention time may be observed when the flow of the mobile phase is stopped. In such a case, wash the column with mobile phases containing about 60% acetonitrile or methanol, and then repeat the analysis.

In order to prevent column clogging, filter (using membrane filters with pore size smaller than 0.45- $\mu$ m or 1/10 of the packing particles) the mobile phase prior to use.

Avoid using the column in the following manner which may lead to shorter lifetime.

- Change to incompatible mobile phase.
- Using the column at a high temperature for long period of time.
- Giving the column a rapid change in pressure.
- Feeding the mobile phase with a high pressure for a long period of time.

### 7. Storage

Rinse the column from any salt using a mobile phase without salts, and then change it to methanol or acetonitrile. Then store the column at a place with few temperature changes after sealing completely the column with the supplied plug to avoid evaporation and drying out of the column bed.

\*1 Test report and Certificate of analysis do not come with guard column and trap column.

\*2 Acetonitrile, alcohol (methanol, ethanol, etc.) and water (contained buffers) can be used as the mobile phase of Metal-free column.

\*3 Use the following pressure table as a guideline for the maximum pressure limit for a column excluded from the HPLC system pressure.