

Instructions For Using Omnifit Chromatography Columns

For 6.6, 10, 15, 25, 35 and 50.5mm bore BenchMark columns



Precision glass chromatography columns designed for low to mid-pressure liquid chromatography.

1.0 Inventory list and specification

1.1 Inventory list

Item	Qty	Component	Material	Fluid contact
Glass column	1	Chromatographic tube	Borosilicate glass	Yes
Endpieces, fixed and/or adjustable depending on part number ordered	2	Plunger	PTFE	Yes
		'O'-ring	FKM/FPM	Yes
		Frit - 25µm	Polyethylene	Yes
		Retaining caps	Acetal-C	No
		Adjusting nut	Acetal-C	No
		Connection cap	Polypropylene	No
Frit kit	2	Frit 10µm	PTFE	Yes
		Frit 30µm	PTFE	Yes
		Frit 10µm	Polyethylene	Yes
Fittings kit 1/16"x0.8mm tube assembly 1 x 0.5m long 1 x 2.0m long	1	Gripper case	316 Stainless steel	No
		Gripper seal	PTFE	Yes
		Gripper fitting	Polypropylene	No
		Flexible tubing	PTFE	yes

1.2 Description - Please refer to the exploded diagram, numbers in parentheses in text relate to numbers in diagram.

1.2.1 Chromatographic tube (5)

The high-precision bore, borosilicate glass tube is available in the lengths and inner diameters described in the Table. It has ground glass threads at each end ensuring secure connection of endpieces.

1.2.2 Column endpieces, fixed (10) and adjustable (1)

The plunger (2) fits into the glass chromatographic tube (5) and is secured by screwing the retaining cap (4) onto the ground glass threads that are integral to the chromatographic tube. The endpiece seals against the chromatographic tube via two FKM/FPM 'O'-rings (6) on each endpiece.

A 25µm PE frit is supplied pre-fitted into the plunger. This frit supports the gel bed.

The endpiece also incorporates a connection cap (9) into which a standard 1/4"-28 UNF male tube end fitting can be connected. Ready assembled tube and fittings are supplied in the fittings kit included with this column.

1.2.3 Flexible tubing

Omnifit columns are supplied with PTFE capillary tubing pre-fitted with 1/4"-28 UNF type Gripper fittings and Grippers. Two lengths are supplied, 2m and 0.5m, which can be connected to either the fixed or adjustable endpieces.

1.3 Resistance

For highest chemical inertness, the PE frit supplied fitted, should be replaced with the PTFE version also supplied in the accessory frit kit. Care should be taken not to expose column components to materials that may cause damage or even failure. Components normally in fluid contact are described in the inventory list. The columns may be used at temperatures up to 20°C and at pressures as shown in the following table:

2.0 Instructions for use

2.1 Unpacking

Omnifit columns are supplied assembled and ready for use, with all the tubing, fittings and connections needed to get started. Unpack the column carefully and check that all components are supplied complete and undamaged.

2.2 Cleaning

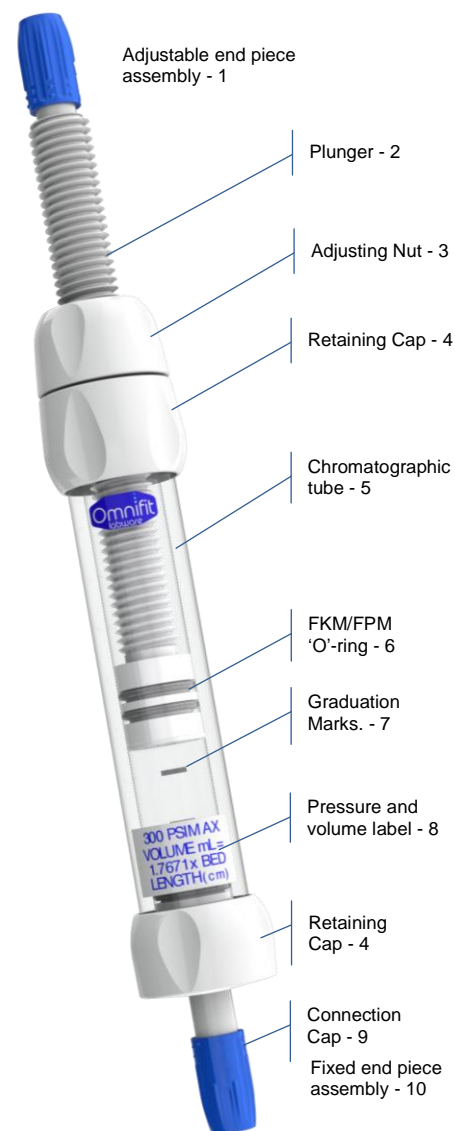
Although every effort is made to maintain the cleanliness of the chromatography components during manufacture, it cannot however, be guaranteed. It is suggested that the PTFE endpieces and glass column be washed before use to remove any possible contaminants. Suitable cleaning agents are soapy water or laboratory detergents. The glass chromatographic tube is autoclavable.

2.3 Dismantling the column

- Unscrew the retaining cap (4) to release it from the ground glass threads on the chromatographic tube.
- Holding the chromatographic tube firmly, pull the endpiece out of the glass tube.
- Repeat for the other end piece if required.

2.4 Assembling the column

When using a column with one fixed and one adjustable end piece, it is usual to insert the fixed endpiece first, fill the column and finally assemble and fit the adjustable endpiece.



Bore size	Rating – Psi
6.6	900
10	600
15	300
25	150
35	150
50	150

Note: - columns must never be used under gas pressure. This may result in an explosion. When applying pressure to the system, the column assembly must be adequately shielded

Note: under no circumstance should the retaining cap be screwed tightly onto the glass column. This may result in damage to the glass threads. Always screw the retaining cap onto the column until it stops, and then unscrew the cap 1/4 turn.

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2.4.1 Fitting the fixed end piece

1. Ensure the threads on both the glass and retaining cap are free from debris.
2. Carefully position the end of the PTFE endpiece into the opening of the chromatographic tube (5).
3. Slowly push the endpiece into the column until a stop is felt. Always keep the endpiece in line with the column; do not insert at an angle as this may damage the endpiece.
4. Screw the retaining cap onto the ground glass threads. Do not tighten, see note in 2.4.

2.4.2 Filling and packing the column

The column can now be filled and packed with the chosen medium, as directed by the manufacturer.

The chromatographic column has graduations printed on the external surface. These graduations are intended to help the user fill the column to a specific bed height. The distance between each graduation is 10mm. Also printed on the column is a pressure and volume label. The equation on the label allows simple calculation of the bed volume when used in conjunction with the graduations. The graduation marks are provided as a guide only.

2.4.3 Fitting and adjusting the adjustable endpiece

The adjusting mechanism allows the endpiece to be set in position in the chromatographic tube to give a variety of bed lengths and enables the endpiece to be finely adjusted to sit on the surface of the packed bed with minimum disturbance to the medium.

1. Ensure the threads on both the glass and retaining cap are free from debris.
2. Close the column outlet (not part of column kit).
3. Adjust the level of liquid in the column such that 1-2 cm of liquid is above the level of the bed.
4. Position the adjusting nut (3) and retaining cap (4) near the frit end of the endpiece.
5. Carefully position the end of the PTFE endpiece into the opening of the chromatographic tube (5).
6. Slowly push the endpiece into the column until the column retaining cap be screwed onto the glass column. Always keep the endpiece in line with the column; do not insert at an angle as this may damage the seal. Ensure no air is trapped below the frit.
7. Screw the retaining cap (4) onto the ground glass threads. Do not tighten, see note in 2.4.
8. Hold the retaining cap and slowly turn the adjusting nut clockwise to move the plunger to the desired position in the tube.

2.5 Connecting tubing to the column

Omnifit Grippers and Gripper fittings enable quick connection and disconnection whether the columns are dismantled, assembled or even already packed.

Using the pre-assembled tubing sets supplied, screw the Gripper fitting into the tubing connection cap until finger-tight.

Connect open ends of tube into ¼"-28 UNF ports of required system.

2.6 Replacing the frit.

We recommend that an Omnifit frit removal tool be used to prevent accidental damage to the endpiece when removing a frit.

2.7 Replacing the 'O'-ring.

1. Using fingers only, carefully remove the 'O'-ring, ensuring that the PTFE seal face is not damaged.
2. Slide the replacement 'O'-ring over the seal face of column plunger and fit into position.

3.0 Replacement parts and accessories.

Replacement chromatographic tubes are available in the following sizes: Complete columns are supplied with either two fixed or one fixed and one adjustable end piece fitted on delivery. Additional adjustable endpieces can be purchased separately and used to replace the fixed end piece(s) supplied to further extend the range of bed heights possible. For further accessories, replacement parts and catalogue numbers, please contact your local representative or visit our website at www.dibaind.com

Care of chromatographic tube.

General precautions.

- Before use, examine the chromatographic tube carefully to ensure that it is in good condition. Do not use if it is scratched, chipped, cracked or etched. Defects like this can seriously weaken the glass and make it prone to breakage during use.
- Never use excessive force to fit endpieces into the chromatographic tube. This includes non-axial, side to side motion. This may damage the endpiece or cause the chromatographic tube to break.
- The 'O'-ring seals on the endpieces form an interference fit with the glass chromatographic tube. This may result in the endpieces being difficult to insert. In this event, pre-wetting the 'O'-rings with water or buffer can assist with insertion.
- Always ensure 'O'-rings and chromatographic tube are completely clean. Any dried on residue can make endpiece insertion difficult.
- In some instances, column filling media or chemicals used during separation can leave a residue on the 'O'-rings and chromatographic tube. This can bind the components in place making endpiece removal difficult. If removal of the endpiece in the normal manner is not effective, place the column in a refrigerator for several hours to help release the components.
- If conditions make the endpiece difficult to remove or insert, use the methods above to assist, and in addition, wear protective gloves and eyewear.

If in any doubt about the use of this product, please consult with your local Omnifit representative.

Note:

- When the column is operating at high-pressures 0.3-0.5 MPa (3-5 bar) it is not possible to adjust the adjustable endpiece because of the backpressure generated. To adjust the position of the endpiece in the column, the column must be disconnected from the system.
- For adjustable endpieces, we recommend that the adjusting nut (3) and retaining cap (4) are positioned near the frit end of the endpiece prior to insertion and adjusted downwards *in situ*. This is to prevent accidental damage to the adjustable endpiece, which may be caused by bending.

Note: good practice requires the use of degassed and pre-filtered solvents when using the column. Particulates within the solvent may prematurely block frits or cause damage to the packed media. Always ensure that the pore size of the frit is smaller than that of the media.

Also, it should be noted that considerably more backpressure would be generated when using PTFE frits rather than Polyethylene due to the nature of the material.

The column should be filled no higher than the last graduation mark on the glass column. This will ensure that the media will not be over compressed or disturbed during insertion of the second endpiece.

ID/Length	50	100	150	250	400	500
6.6	✓	✓	✓	✓	✓	✓
10		✓	✓	✓	✓	✓
15		✓	✓	✓	✓	✓
25		✓	✓	✓	✓	✓
35			✓	✓	✓	
50.5				✓	✓	✓