

Columns XK 16, XK 26, XK 50 Adaptors AK 16, AK 26, AK50

XK columns, designed for Standard Liquid Chromatography of macromolecules. They are jacketed and available in the following dimensions:

	length:	20 cm	30 cm	40 cm	60 cm	70 cm	100 cm
i.d. 16 mm		XK 16/20	-	XK 16/40	-	XK 16/70	XK 16/100
i.d. 26 mm		XK 26/20	-	XK 26/40	-	XK 26/70	XK 26/100
i.d. 50 mm		XK 50/20	XK 50/30	-	XK 50/60	-	XK 50/100

AK adaptors are for use with XK columns. One adaptor is fitted in each column on delivery. By fitting an additional adaptor at the bottom end of the column a larger range of bed heights is obtained (Table 1).

Unpacking

XK columns are delivered complete with thermostat jacket, one flow adaptor and flanged tubing at both ends for direct connection to valves, pumps and UVmonitors.

Unpack the XK column or adaptor carefully and check the contents against the packing list supplied. Inspect for any missing components or damage that may have occurred during transit. Report any damage immediately to the local GE Healthcare representative and to the transport company concerned.

Description

Please refer to the exploded diagram (Fig 3) for details.

Chromatographic tube (6). The high-precision bore, borosilicate glass tube has a length of 200, 300, 400, 600, 700±0.25 or 1000±1 mm with an inner diameter of 16±0.02 mm, 26±0.02 mm or 50±1.00 mm.

Thermostat jacket (7). The jacket is an acrylic plastic tube with threaded ends. Sealing is provided by an O-ring and a sealing ring.

Column end pieces (11). The red end pieces, made of reinforced acetal plastic, hold the chromatographic and

jacket tubes in position. Each end piece houses an Oring, sealing ring, washer and locking ring. The end piece also carries a tubing connector through which thermostat fluid enters or leaves the column.

Column bottom piece (1). The bottom piece screws onto the column end piece. The gel bed is supported by a 10 µm nylon net ring (5) on top of the plunger (3). The bottom piece seals against the chromatographic tube (6) via the O-ring (2).

Adaptor (8). The adaptor consists of a top piece that fits the column end piece, a plunger (3) that carries the gel bed protection and support screen (4, 5), and adjusting mechanism.

The adjusting mechanism allows the plunger to be set in position in the chromatographic tube, and forms the mechanism for sealing against the column wall.

Tubing. XK columns are supplied with flanged M6-type capillary tubing. The adaptor tubing is 50 cm long. The bottom piece tubing is 30 cm long. A 5 cm protection tubing is threaded over the capillary tubing in the inlet of the adaptor and column bottom piece to prevent squeezing of the capillary tubing during transport and storage.

Materials

Under normal operating conditions, the only materials in contact with the effluent are: glass-fibre reinforced polypropylene, polyamide, acrylic plastic, borosilicate glass, fluoro-rubber and Tefzel™ capillary tubing.



Resistance

The columns can be used in aqueous solutions and nearly all organic solvents commonly used in liquid chromatography of macromolecules with the following few exceptions: chlorinated hydrocarbons, acetone and other ketones, aliphatic esters and phenol. Solutions containing more than 10% NaOH, 10% HCl, other strong mineral acids or 5% acetic acid should not be used.

The thermostat jacket should only be used with water as cooling fluid. Acrylic plastic is not resistant to alcohols, ethylene glycol or other organic solvents.

The column and thermostat jacket may be used at temperatures up to 60 °C and at pressures up to 0.5 MPa (5 bar) for XK 16 and XK 26 columns and 0.3 MPa (3 bar) for XK 50 columns. The jacket can take 0.2 MPa (2 bar).

Cleaning

Suitable cleaning agents are soapy water or laboratory detergents. Enzyme detergents are recommended for removing proteinaceous contaminants.

The column is autoclavable without the thermostat jacket, tubing and net ring. Alternatively, the complete column may be sterilized with ethylene oxide.

Instructions

Important! Always loosen the black adjusting knob (9) before inserting or removing the bottom piece and adaptor of the column.

Connecting capillary tubing to XK columns (Fig 1)

1. Dismantle the bottom piece (1) or adaptor (8) as described below.
2. Take a piece of capillary tubing (0.8 mm i.d. for XK 16 and XK 26, 1.2 mm i.d. for XK 50) and make a flanged tubing connection with an M6 connector at one end. (See "Tubing connection" and Fig 2 for details). Pass the unflanged end of the tubing down through the adaptor or up through bottom piece.
3. Slide a nipple over the tubing and flange using a flanging tool. See also "Tubing connection".
4. Finger-tighten the plunger (3).
5. Reassemble the bottom piece or adaptor.

Tubing connection (Fig 2)

In the XK column system, the tubing connection is of M6 flanged-tube type. For flanging 0.5–0.8 mm i.d. capillary Tefzel tubing, the Flanging/Start Up Kit 120 V (Code No. 19-5079-01) or 220 V (Code No. 19-5090-01) is necessary. For 1.2 mm tubing the Flanging Tip Kit 1.2 mm (Code No. 18-4597-01) is required. Instructions for flanging capillary tubing are included in these kits.

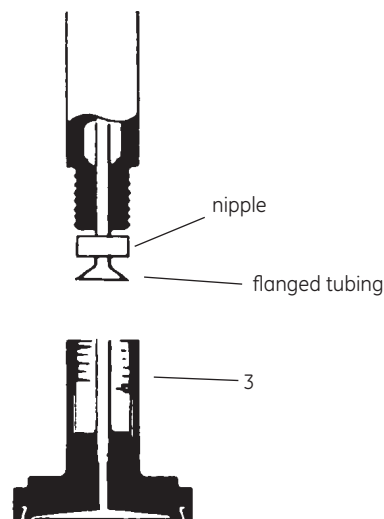


Fig 1. Connection of flanged capillary tubing with nipple.

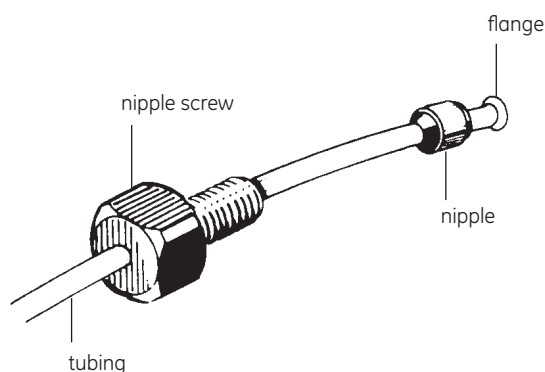


Fig 2. Flanged tubing connection.

Dismantling the column XK 16 and XK 26

1. Unscrew the bottom piece (1) and adaptor (8).
2. Use the dismantling tool (10) to unscrew the locking rings and to free the chromatographic tube (6).
3. Remove the sealing ring, washer and chromatographic tube (6).
4. Unscrew the column end pieces from the thermostat jacket (7). The O-ring may now be removed.

Dismantling the column XK 50

1. Unscrew the bottom piece (1) and the adaptor (8).
2. Unscrew the column end pieces from the thermostat jacket (7). The O-rings may now be removed.

Note: The XK 50 column chromatographic glass tube is held in position by built-in sealing rings in the end piece. Washer and locking rings are not required.

Important! Since the XK 50/100 chromatographic glass tube is very heavy it can easily slide out from its hold in the built-in sealing rings. To keep the tube in position when washing the column, screw the conical adaptor (supplied with Packing Reservoir RK 50) to one of the end pieces of the column and hold that end of the column downwards during washing.

After washing, screw the bottom end piece into the end piece before mounting the column vertically.

Dismantling the adaptor or bottom piece

1. Loosen the black adjusting knob (9).
2. Unscrew the plunger (3).
3. The O-ring and expander ring (only XK 50 adaptor) (2) may now be removed.
4. The net ring (5) can be removed from the plunger with a sharp tool. The support screen (4) may now be removed.

Replacing the net ring and bed support (Fig 4)

1. Remove the net ring (5) with a sharp tool.
2. Warm the new net ring in hot water 50–60 °C.
3. Lay the new support screen (4) and net ring (5) in place.
4. Press on the net ring.

Reassembling the column XK 16 and XK 26

1. Put the chromatographic glass tube (6) into the thermostat jacket (7).
2. Install one of the end pieces by screwing in the thermostat jacket (7), ensuring that the O-ring is in place.
3. Put a sealing ring onto the end of the glass tube followed by a washer.
4. Screw in the locking ring with the dismantling tool (10).
5. Repeat steps 2–4 for the other end of the column.

Reassembling the column XK 50

1. Screw the two end pieces onto the thermostat jacket (7). Ensure that the metal spring-rings are seated in the built-in sealing rings and that the O-rings are in place in the end pieces.
2. Wet the built-in sealing rings with water. Slide in one end of the chromatographic glass tube through the the built-in sealing ring, the thermostat jacket and then through the built-in sealing ring of the other end piece. Push the tube towards the second sealing ring. Use a small screwdriver or a similar blunt tool to carefully ease the sealing ring over the tube while at the same time pushing the tube through the sealing ring.
3. **Important!** Ensure that the distance from the sealing ring to the end of the chromatographic glass tube is equal at the both ends.
4. Screw the bottom piece (1) and the adaptor (8) into the end piece. **Important! Tighten properly**

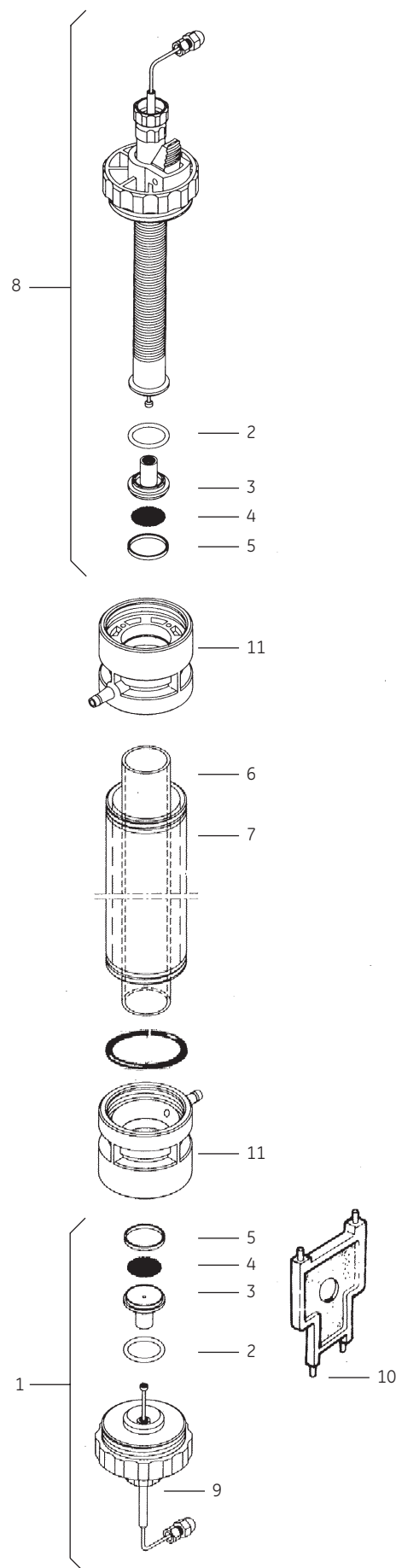


Fig 3.

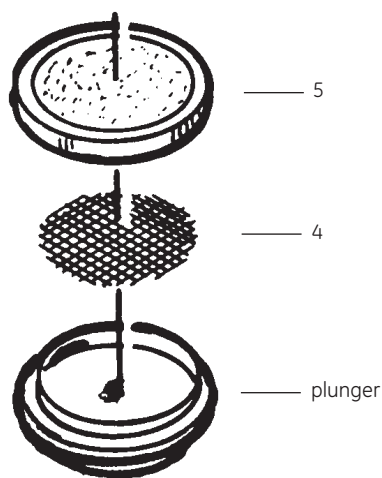


Fig 4. Replacing the support screen and net ring.

Reassembling the adaptor

1. Connect the capillary tubing to the plunger as described above.
2. Finger tighten the inner adjusting tube in the plunger.
3. Adjust the O-ring on the plunger against the outer adjusting tube using the adjusting knob (9).
4. The adaptor is now ready for use.

Reassembling the bottom piece

1. Connect the capillary tubing to the plunger as described above.
2. Finger-tighten the inner adjusting rod in the plunger.
3. Adjust the O-ring on the plunger against the bottom piece using the adjusting knob.
4. Screw the bottom piece into the column end piece. Finger tighten the adjusting knob (9) to obtain a good seal. Do not overtighten.

Inserting and adjusting the adaptor

1. Close the column outlet.
2. Adjust the level of liquid in the column to within 1–2 mm of the end of the chromatographic tube.
3. Slacken the tightening mechanism and insert the plunger at an angle so that no air is trapped under the net.
4. Adjust the black knob to give a sliding seal between the column wall and the O-ring (2).
5. Slide the plunger slowly down the column so that the air in the adaptor above the net and in the capillary tubing is displaced by the eluent.
6. Screw the top piece into the column end piece.

7. Adjust the adaptor at the bed surface by pressing the outer adjusting tube down through the top piece. The adaptor moves down one thread at a time and is automatically locked in the desired position by QuickLock.

Twist the adaptor 3 mm down into the gel. Fingertighten the adjusting knob to obtain a good seal. Do not overtighten.

Adjusting the QuickLock adaptor in a packed column

When the column is operating at high pressures 0.3–0.5 MPa (3–5 bar) it is not possible to press the QuickLock as it is self-locking.

To readjust the position of the adaptor in the column follow the description below:

1. Stop the pump. Put the flow stopper pin into the outlet.
2. Disconnect the column from the pump.
3. Loosen the adjusting knob.
4. Press in QuickLock and adjust the adaptor at the bed level.
5. Finger-tighten the adjusting knob to obtain a good seal. Do not overtighten.
6. Connect the column to the pump.
7. Disconnect the flow stopper pin.
8. Twist the adaptor 3 mm down into the gel, fingertighten the adjusting knob.

Note: When using organic solvents, the liquid level in the column can be lowered to 5 mm above the gel bed surface. The adaptor may then be inserted directly into the column and lowered to the liquid surface. The air in the adaptor is displaced and the position of the adaptor secured as described above. When the adaptor is in position and the gel bed has been equilibrated at the operating pressure, there should be no liquid space between the gel bed surface and the adaptor net. The position of the adaptor may be readjusted after equilibrating the gel bed, but before the adaptor is moved the column outlet must be closed.

Table 1. The maximum bed heights (cm) and bed volumes (ml) possible using one adaptor or two adaptors in the various XK columns.

Column	With one adaptor		With two adaptors	
	Volume (ml)	Bed height (cm)	Volume (ml)	Bed height (cm)
XK 16/20	5-31	2.5-15.5	0-31	0-15.5
XK 16/40	45-70	22.5-35	16-70	8-35
XK 16/70	105-130	52.5-65	76-130	38-65
XK 16/100	165-190	82.5-95	136-190	68-95
XK 26/20	5-66	1-12.5	0-66	0-12.5
XK 26/40	122-186	23-35	45-186	8.5-35
XK 26/70	281-344	53-65	204-344	38.5-65
XK 26/100	440-504	83-95	363-504	68.5-95
XK 50/20	0-274	0-14	0-274	0-14
XK 50/30	265-559	14-28	0-559	0-28
XK 50/60	794-1088	40-56	500-1088	26-56
XK 50/100	1588-1862	81-95	1274-1862	65-95

Ordering information

Column	Code No.	Adaptor*	Code No.	Packing reservoir	Code No.
XK 16/20	18-8773-01	AK 16	18-8778-01	RK 16/26	18-8793-01
XK 16/40	18-8774-01				
XK 16/70	18-8775-01				
XK 16/100	18-8776-01				
XK 26/20	18-1000-72	AK 26	18-8766-01	RK 16/26	18-8793-01
XK 26/40	18-8768-01				
XK 26/70	18-8769-01				
XK 26/100	18-8770-01				
XK 50/20	18-1000-71	AK 50	18-8754-01	RK 50	18-8790-01
XK 50/30	18-8751-01				
XK 50/60	18-8752-01				
XK 50/100	18-8753-01				
			AK 50FF XK 50FF Kit**	18-1000-73 18-1000-70	

* Each XK column is delivered with one AK adaptor

** XK50 FF Kit containing one AK50 FF and one XK50 FF end piece

Accessories

Sample Applicators	Code No.	Manual Valves	Code No.	Tubing Connectors	Code No.
SA-5	19-2146-01	SRV-1	19-2145-01	SRTC-2	19-2143-01
SA-50	19-2147-01	SRV-3	19-2098-01	SRTC-3	19-2144-01
Superloop™ 10 ml	19-7585-01	SRV-4	19-2099-01	Luer lock female/ M6 male	18-1027-62
Superloop 50 ml	19-7850-01	V-7	19-7500-01	Luer lock female/ M6 male	18-1027-12
		V-8	19-7576-01	M6 male	18-1017-98
				M6 female	18-1003-68

Spare parts

The exploded diagram (Fig 3) shows the positions of the different parts of the XK columns. For replacements please order according to the spare parts list below using the appropriate code numbers.

Item No.	Code No. Designation	XK 16	XK 26	XK50	Material	No. per pack
1	Bottom piece complete	18-1031-47	18-1031-48	18-1031-49	A	1
2	O-ring	19-0163-01	19-0688-01	19-0685-01	E	5
3	Plunger	18-1031-80	18-1031-81	18-8758-01	B	1
4	Support screen	19-0651-01	18-9377-01	19-0664-01	D	5
5	Net ring (10 µm)	18-8761-01	18-8760-01	18-8759-01	B,C	5
6	Glass tube for column length				F	1
	20 cm	19-0315-01	18-1000-84	18-1000-85		1
	30 cm	-	-	19-1326-01		1
	40 cm	19-0113-01	19-0145-01	-		1
	60 cm	-	-	19-0525-01		1
	70 cm	19-0114-01	19-0146-01	-		1
	100 cm	19-0115-01	19-0147-01	19-0509-01		1
7	Thermostat jacket for column length				G	
	20 cm	18-0011-72	18-1000-82	18-1000-83		1
	30 cm	-	-	18-0011-78		1
	40 cm	18-0011-73	18-0011-67	-		1
	60 cm	-	-	18-0011-77		1
	70 cm	18-0011-74	18-0011-68	-		1
	100 cm	18-0011-75	18-8791-01	18-8765-01		1
8	AK adaptor (complete)	18-8778-01	18-8766-01	18-8754-01		1
11	End piece complete	18-6488-01	18-6489-01	18-8797-01		1

Available but not illustrated

Flanging/Start-up Kit 220 V	19-5090-01	1
120 V	19-5079-01	1
Flanging Tip Kit i.d. 1.2 mm	18-4597-01	1
Capillary tubing 1.2 mm i.d., 1.8 mm o.d.	19-4370-01	2 m
Capillary tubing 0.8 mm i.d., 1.8 mm o.d.	19-7435-01	2 m

Materials

A = Reinforced acetal plastic

B = Polypropylene (reinforced glassfibre)

C = Polyamide (Nylon)

D = Polypropylene

E = Ethylenepropylenedione polymer (EPDM)

F = Borosilicate glass

G = Acrylic plastic

www.gehealthcare.com//lifescience
www.gehealthcare.com

GE Healthcare Bio-Sciences AB
Björkgatan 30
751 84 Uppsala
Sweden

Superloop is a trademark of GE Healthcare companies.
GE, imagination at work and GE monogram are trademarks of
General Electric Company

All goods and services are sold subject to the terms and conditions
of sale of the company within GE Healthcare which supplies them.
GE Healthcare reserves the right, subject to any regulatory and
contractual approval, if required, to make changes in specifications
and features shown herein, or discontinue the product described at
any time without notice or obligation. Contact your local
GE Healthcare representative for the most current information.

© 2006 General Electric Company – All rights reserved.

GE Healthcare Bio-Sciences AB, a General Electric company.

GE Healthcare Bio-Sciences AB
Björkgatan 30, SE-751 84 Uppsala, Sweden

GE Healthcare Europe GmbH
Munzinger Strasse 5, D-79111 Freiburg, Germany

GE Healthcare UK Ltd
Amersham Place, Little Chalfont, Buckinghamshire, HP7 9NA, UK

GE Healthcare Bio-Sciences Corp
800 Centennial Avenue, P.O. Box 1327, Piscataway, NJ 08855-1327, USA

GE Healthcare Bio-Sciences KK
Sanken Bldg. 3-25-1, Hyakunincho, Shinjuku-ku, Tokyo 169-0073, Japan

Asia Pacific Tel: +85 65 6 275 1830 Fax: +852 2811 5251 • Australasia Tel: +61 2 9899 0999 Fax: +61 2 9899 7511 • Austria Tel: 01/57606-1619 Fax: 01/57606-1627 • Belgium Tel: 0800 73 888 Fax: 03 272 1637 • Canada Tel: 800 463 5800
Fax: 800 567 1008 • Central, East, & South East Europe Tel: +43 1 982 3826 Fax: +43 1 985 8327 • Denmark Tel: 45 16 2400 Fax: 45 16 2424 • Finland & Baltics Tel: +358 (0)9 512 39 40 Fax: +358 (0)9 512 39 439 • France Tel: 01 69 35 67 00
Fax: 01 69 41 96 77 • Germany Tel: 0761/4903-490 Fax: 0761/4903-405 • Italy Tel: 02 27322 1 Fax: 02 27302 212 • Japan Tel: +81 3 5331 9336 Fax: +81 3 5331 9370 • Latin America Tel: +55 11 3933 7300 Fax: +55 11 3933 7304 • Middle East
& Africa Tel: +30 210 9600 687 Fax: +30 210 9600 693 • Netherlands Tel: 0165 580 410 Fax: 0165 580 401 • Norway Tel: 815 65 555 Fax: 815 65 666 • Portugal Tel: 21 417 7035 Fax: 21 417 3184 • Russia & other C.I.S. & N.I.S Tel: +7 (095) 232 0250
Fax: +7 (095) 230 6377 • South East Asia Tel: 60 3 8024 2080 Fax: 60 3 8024 2090 • Spain Tel: 93 594 49 50 Fax: 93 594 49 55 • Sweden Tel: 018 612 1900 Fax: 018 612 1910 • Switzerland Tel: 0848 8028 12 Fax: 0848 8028 13 • UK Tel: 0800
616928 Fax: 0800 616927 • USA Tel: 800 526 3593 Fax: 877 295 8102

