Superloop 150 ml

Instructions

Introduction

Superloop™ 150 mL is a large volume sample loop recommended for sample volumes of 5–150 mL in the flow rate range 0.5–100 mL/min. It can be loaded by either a syringe or a pump. It can also be used as a reservoir where a peak from a chromatographic run can be collected and then injected onto another column.

Superloop 150 mL is a standard component that can be used with all ÄKTA™ chromatography systems from Cytiva. It is also available as a component for other chromatography systems.

Superloop 150 mL is used together with an injection valve such as V9-Inj/V9H-Inj or INV-907 and replaces a simple sample loop.

Specifications

Flow rate range:	0.5–100 mL/min
Size:	340 x 45 mm
Sample volume range:	5–150 mL
Pressure limit:	2 MPa (20 bar, 300 psi)
Minimum pressure required for seal movement:	0.05 MPa (0.5 bar, 7.5 psi)
Minimum pressure required for opening valve:	0.1 MPa (1 bar, 15 psi)

Wetted materials:	PTFE (polytetraflouroethylene), EPDM (ethylenepropylendimonomer), PEEK (polyetheretherketone), borosilicate glass and titanium.

WARNING
Risk for shattered glass in case of overpressure. Maximum system pressure is 2.0 MPa.

CAUTION
Cutting risk. Avoid shattered glass.

CAUTION
Always use appropriate personal protective equipment (PPE) during operation and maintenance of this product.

Unpacking

When unpacking, please check the contents and carefully examine the equipment for any visible signs of damage that may have occurred during shipping.

Designation	No. per pack	Code No.
Superloop 150 mL	1	18-1023-85
Instructions	1	18-1028-73

Description

Superloop 150 mL consists of seven parts; two outer and two inner end pieces, one glass tube, one movable seal and a protective jacket (see *Fig. 7, on page 9*).

The glass tube has a graduated scale of 5 mL increments and seals against the inner end pieces. The protective jacket is held in position by the outer end pieces.

A movable seal is situated in the glass tube between the two inner end pieces. This seal divides the glass tube into two separate chambers. Depending on the flow direction the seal moves towards either end of the glass tube.

A springloaded valve made of titanium is located in the center of the movable seal. When Superloop 150 mL is in loading position, i.e. the movable seal is in the bottom of the glass tube, the valve is closed and remains closed during sample loading.

When the sample is injected onto the column the seal moves downwards. When reaching the bottom position the pressure increase causes the valve to open and the buffer to pass through the valve (see *Fig. 1, on page 3* and *Fig. 2, on page 4*).

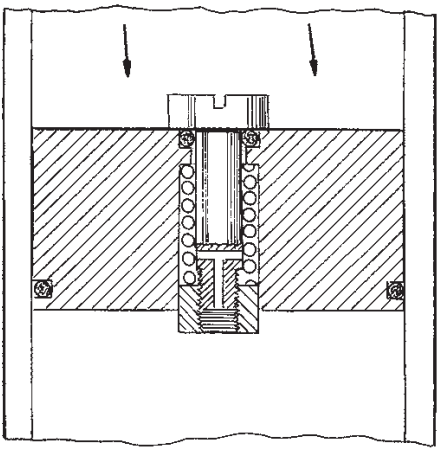


Figure 1: The movable seal moving down the glass tube.

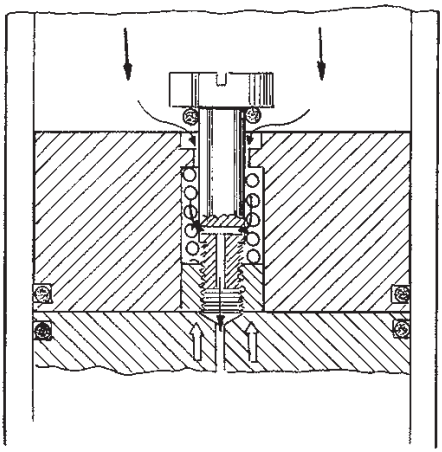


Figure 2: When the end position is reached, the pressure increase causes the valve to open.

Start up

Note: *Before use, rinse the entire Superloop with 20% ethanol. Follow the "Disassembling" and "Reassembling" instructions in the Operations section of these instructions. Put the system pressure limit at max 2 MPa.*

Step	Action
1	Connect appropriate tubings to the inner end pieces.
2	Unscrew the upper outer end piece and take out the inner end piece. If the inner end piece is difficult to remove, the edge can be pried up carefully with a spatula to get a sufficient grip.
3	Fill the upper chamber with eluent, i.e. start buffer for gradient elution.
4	Insert the inner end piece and tighten it by screwing the outer end piece into place. For the best operation, make sure there is no trapped air.
5	Turn Superloop upside down and repeat 2 and 3 with the bottom end piece.
6	Turn the injection valve to Manual load (or LOAD) position and connect Superloop to the valve as follows: • Bottom end tubing to port LoopF (or 2 on INV-907). • Upper end tubing to port LoopE (or 6 on INV-907)

Step	Action
7	Start the pump. When using V9-Inj/V9H-Inj, refer to the System Handbook of the ÄKTA system for loading the Superloop with a pump.
8	Turn the valve to INJECT position. The movable seal now travels towards the bottom end piece and the contents of the bottom chamber are injected onto the column.
9	When the movable seal reaches the bottom end piece, turn the valve to Manual load (or LOAD) position.

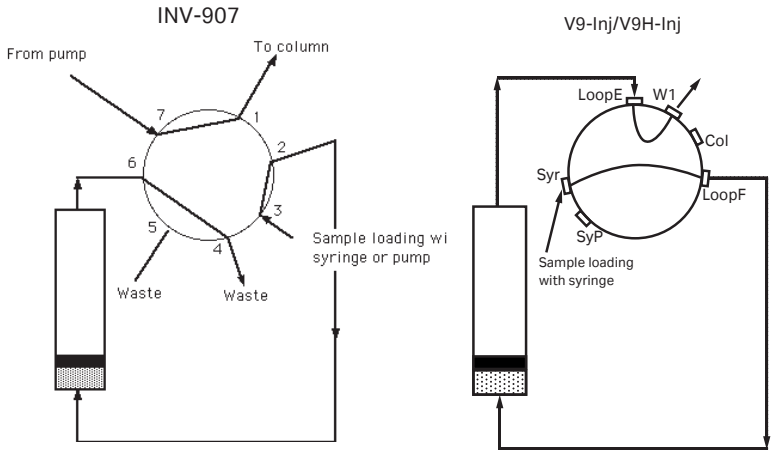


Figure 3: Valve position 1 – LOAD.

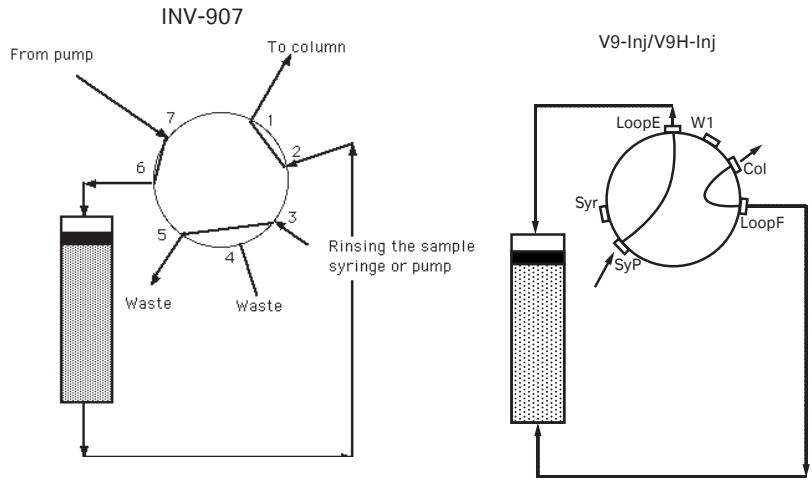


Figure 4: Valve position 2 – INJECT.

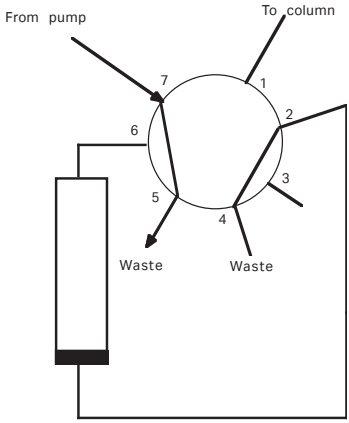


Figure 5: Valve position 3 – WASH.

Operation

When the start-up procedure is completed Superloop is ready to use.

Step	Action
1	Turn the injection valve to Manual load (or LOAD) position. Load Superloop with sample via valve port 3. The sample can be transferred to the loop from a large volume syringe or by using a pump. When using V9-Inj/V9H-Inj, refer to the System Handbook of the ÄKTA system for loading the Superloop with a pump. To connect a syringe use a Luer-Lock fitting (*Fig. 6, on page 7*).

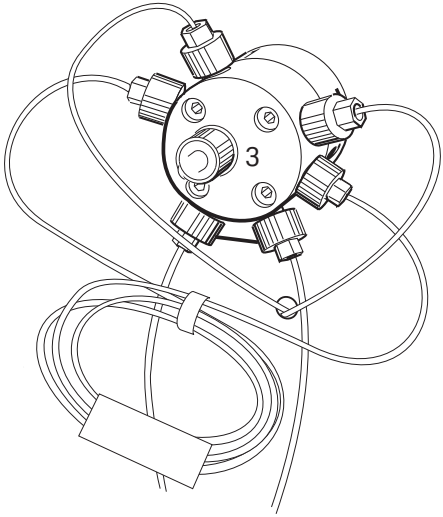


Figure 6:

2	When Superloop is loaded and the column equilibrated, turn the valve to INJECT position. The sample will now be injected onto the column. Depending on the experimental conditions, the loaded sample can be injected all at once or in several smaller volumes. For smaller volumes, turn the injection valve to Manual load (or LOAD) after the desired volume has left Superloop.

Step	Action
3	When the movable seal reaches the bottom end piece, and all sample has been flushed out, turn the valve to Manual load (or LOAD) position. Superloop is now ready for reloading (as described in section 1).

CAUTION
The movable seal and the end pieces must be inserted vertically. Make sure that all parts are well supported to avoid tilting. If the tube is tilted during mounting the angular force can cause breaking of the tube

If the eluent is changed, Superloop must be rinsed out to avoid undesired contamination. This is done by filling and emptying the loop with the new eluent using a pump.

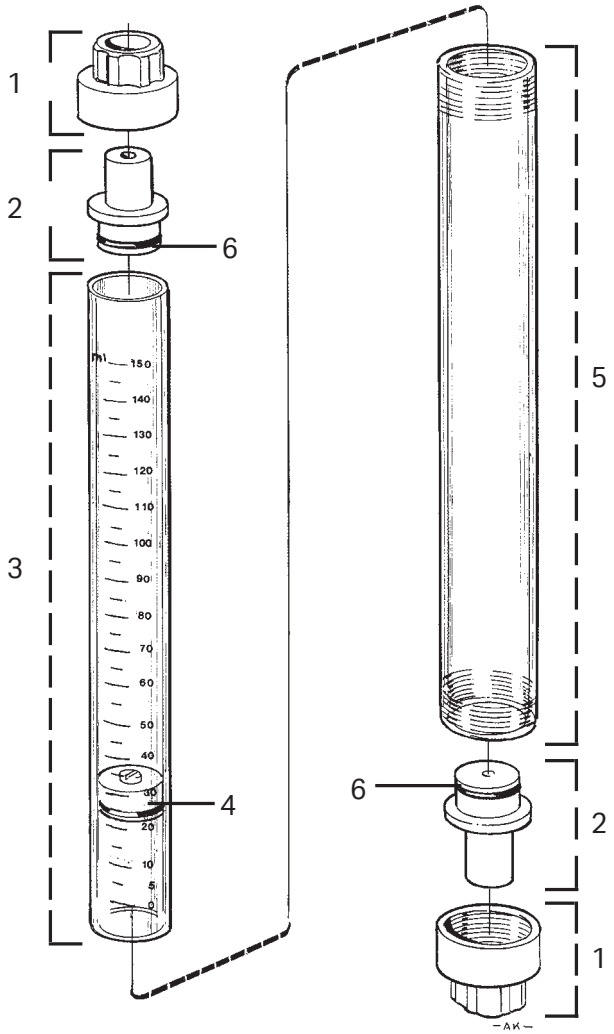
Cleaning

Superloop is designed to facilitate Cleaning-In-Place (CIP). This is achieved by pumping a cleaning or sanitizing agent through Superloop. The standard recommendation is to pump 0.5 M NaOH for 30 minutes.

Disassembling

The figure indications below refer to the cross-sectional diagram in *Fig. 7, on page 9*.

Step	Action
1	Unscrew the outer upper end piece (1).
2	Pull out the protective jacket (5).
3	Take out the inner end piece (2). If it is difficult to take out, the edge can be pried up carefully with a spatula to get a sufficient grip.
4	Unscrew the outer bottom end piece (1).
5	Take out the inner end piece (2).
6	Push out the movable seal (4) carefully with a glass rod.



1. Outer end piece
2. Inner end piece
3. Glass tube
4. Movable seal
5. Protective jacket
6. O-ring

Figure 7: Cross-sectional diagram.

Reassembling

Before reassembling, wet the O-rings with distilled water to lubricate them.

Step	Action
1	Insert the movable seal (4) into the glass tube from above with the O-ring entering first.
2	Insert the inner bottom end piece (2).
3	Screw on the outer bottom end piece (1).
4	Push the protective jacket (5) into the end piece.
5	Insert the inner upper end piece (2).
6	Screw on the outer upper end piece (1).

Ordering information

Designation	No.per pack	Code No.
Movable seal with flow through valve	1	18-1029-58
Inner end piece	1	18-1029-59
O-ring inner end piece	2	18-1029-60
Outer end piece	1	18-1118-61
Glass tube	1	18-1032-20
Union 1/16" male to luer female	2	18-1112-51
Union M6 male to luer female	2	18-1027-62
Union M6 female to luer female	2	18-1027-12

Troubleshooting

Problem	Possible cause	Action
Flow through valve does not function.	The movable seal has been inserted upside down.	Disassemble and reassemble.
Injected volume is less than expected.	Trapped air in the upper chamber.	Disassemble and reassemble.

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