SUPERLOOP 10 ml, 50ml, 150ml

LIQUID CHROMATOGRAPHY

Introduction

Superloop™ allows the introduction of large sample volumes into a pressurized fluid system. It is used together with the Injection Valve MV-7 or INV-907 and replaces a simple sample loop.

Features:

- Flexible — inject large or small sample volumes
- High reproducibility and recovery
- No gradient dilution with internal movable seal
- Available in 10 ml and 50 ml volumes with 1/16" fitting and 10 ml, 50 ml and 150 ml volumes with M6 fitting

General description

Superloop consists of seven parts; two outer end pieces and two inner end pieces, one glass tube and one movable seal. (See Fig. 1). Enclosing the glass tube is a protective jacket.

The glass tube seals against the inner end pieces and the protective jacket is held in position by the outer end pieces.

The inlet and outlet tubings supplied are connected to the inner end pieces.

In the glass tube a seal moves 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 the upper or lower end piece.

Superloop 10 ml and 50 ml

The glass tube has a graduated scale of 1 ml increments. Inside the glass tube, near the bottom end piece, is a 1 mm^2 countersink which operates as a bypass channel.

When the seal reaches the bypass channel, the fluid in the upper chamber is allowed to flow past the movable seal and out of the outlet tubing. (See Fig. 2.)

The elastic properties of the O-ring function as a check valve. When the seal has reached the bypass channel at the bottom end piece, and the flow is then interrupted, the bypass channel is closed. Reverse flow will then push the movable seal towards the upper end piece.

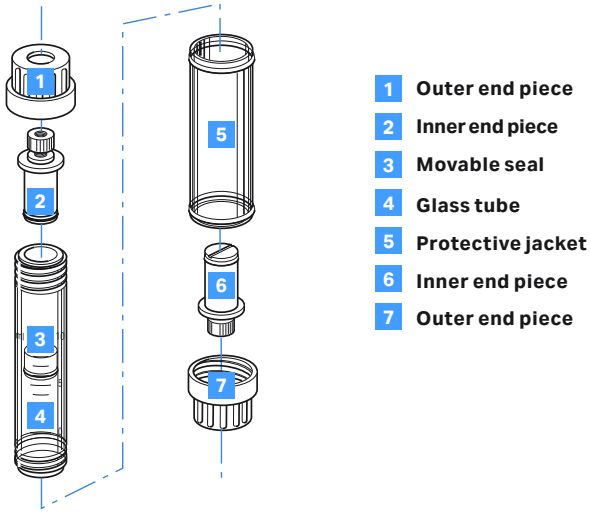

Fig 1.

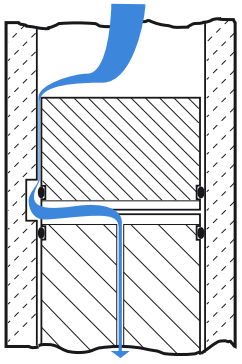

Fig 2.

Superloop 150 ml

The glass tube has a graduated scale of 5 ml increments and seals against the inner end pieces.

A springloaded valve made from titanium is located in the center of the movable seal. When Superloop 150 ml is in loading position, the valve is closed and remains closed during sample loading. When the sample is injected onto the column the seal moves downwards. When the bottom position is reached, the pressure increase causes the valve to open and the buffer to pass through the valve. (See Fig. 3.)

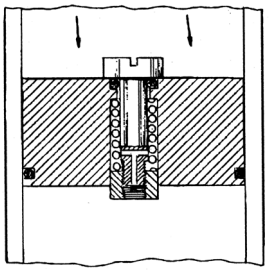

Fig 3A. The movable seal moving down the glass tube.

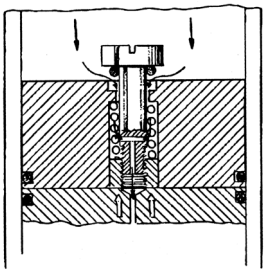

Fig 3B. When the end position is reached, the pressure increase causes the valve to open.

Operation

Figure 4 gives a schematic description of how the Superloop operates together with the injection valve.

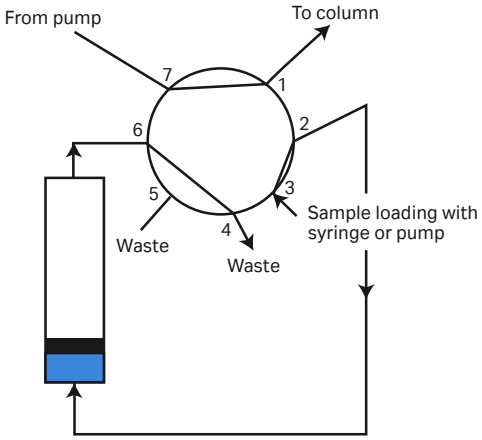

Fig 4A. Valve position 1 – LOAD.

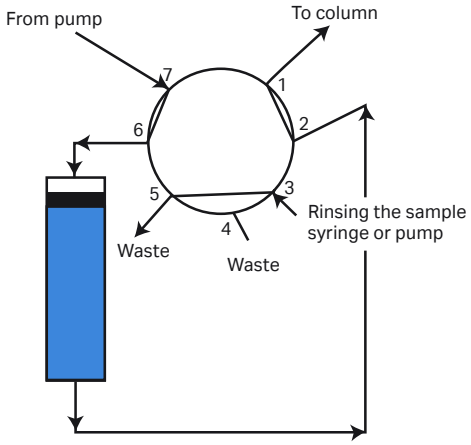

Fig 4B. Valve position 2 – INJECT.

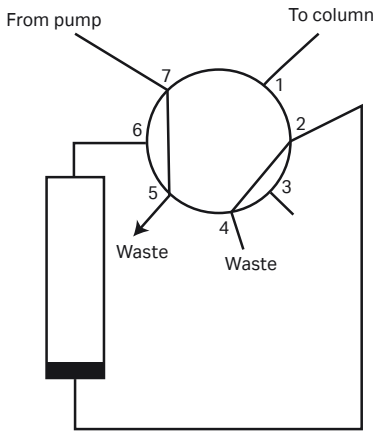

Fig 4C. Valve position 3 – WASH.

Technical specifications

Operating data	
Max flow rate	100 ml/min
	10 ml/min when emptying completely
Max pressure	
10 ml, 50 ml	4 MPa (40 bar, 580 psi)
150 ml	2 MPa (20 bar, 290 psi)
Minimum pressure for seal movement	<0.1 MPa (1 bar, 14 psi)
Minimum pressure for opening valve (150 ml)	0.1 MPa (1 bar, 14 psi)
Operating environment	+4 to +40 °C

Physical data	
Wetted materials Inner end piece and movable seal	
10 ml, 50 ml	ETFE (ethylenetetraflouroethylene)
150 ml	PTFE (polytetraflouroethylene)
O-rings	
10 ml, 50 ml	FFKM (perfluororubber)
150 ml	EPDM (ethylenepropylendimonomer)
Glass tube	Borosilicate glass
Chemical resistance	The wetted parts are resistant to organic solvents and salt buffers commonly used in chromatography of biomolecules, except 100% ethylacetate, 100% hexane and 100% tetrahydrofuran (THF)
pH stability range	1–13, 1–14 (<1 day exposure)
Dimensions	
10 ml	130 × 30 mm
50 ml	335 × 30 mm
150 ml	340 × 45 mm

Ordering information

Superloop 10 ml and 50 ml

Item	Quantity per pack	Code no.
Superloop 10 ml, 1/16”	1	18-1113-81
Superloop 50 ml, 1/16”	1	18-1113-82
Superloop 10 ml, M6	1	19-7585-01
Superloop 50 ml, M6	1	19-7850-01
Inner end piece	1	19-7846-01
Outer end piece	1	19-5167-01
O-ring 27.1 × 1.6 mm	5	19-7595-01
O-ring 11.3 × 2.4 mm, Simriz	2	18-1104-97
O-ring 11.3 × 2.4 mm, Kalrez	3	18-6300-01
O-ring 11.3 × 2.4 mm, FPM	5	19-7584-01
Movable seal	1	19-7845-01
Protective jacket (50 ml)	1	19-7849-01
Protective jacket (150 ml)	1	18-1118-62
Glass tube with thread and groove (10 ml)	1	19-7593-01
Glass tube with thread and groove (50 ml)	1	19-5165-01
Tubing kit for 1/16" Superloop (10 ml)	1	18-1113-83
Tubing kit for 1/16" Superloop (50 ml)	1	18-1113-84
Stop plug, 1/16"	5	18-1112-52
Stop plug, M6	2	19-5170-01
Union		
1/16" female/M6 male	6	18-1112-57
M6 female/1/16" male	8	18-1112-58
Superloop 150 ml		
Superloop 150 ml	1	18-1023-85
Glass tube (150 ml)	1	18-1032-20
Inner end piece	1	18-1029-59
O-ring inner end piece	2	18-1029-60

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