

Valve V-8

1 Introduction

Valve V-8 (Code No. 19-7576-01) is designed to be used as a selection valve for columns, solvents and samples or as a minifraction collector.

The valve lever rotates through 360° and has eight different positions. Each position connects a central port with one of the eight peripheral ports (Fig 1.).

2 Unpacking

Please check delivery against the packing list.

3 Description

Functional design

The valve consists of two main parts: the central shaft and its outer housing. The central shaft can be rotated 360° inside the housing. As the shaft is turned, the central port on the bottom of the valve is connected to one of the peripheral ports 1–8, allowing a clear liquid path (Fig 1.).

The peripheral port locations are marked on the top of the plastic housing as well as on the aluminium housing directly above each port. When selecting a port, pull the valve lever up, rotate it to the valve port number desired and then push it back down into its safety position.

Specifications

Maximum operating pressure:	50 bar (5 MPa, 700 psi)
Back pressure at 1 000 ml/h:	3 bar (0.3 MPa, 45 psi)
Wetted material:	PEEK
Lever throw angle:	360°
Dead volume:	1 µl
Internal volume of flow channels between inlet and outlet:	7.4 µl
Diameter of flow channels:	0.6 mm

Chemical resistance

The valve body in contact with the solvent is made of PEEK which is resistant to organic solvents and salt buffers commonly used in a biochemical laboratory.

The valve can be used in a pH range of 2–13. If very strong acids (pH < 2) or bases (pH > 13) are used, the valve should be rinsed immediately afterwards.

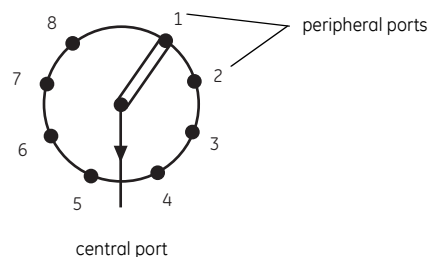


Fig 1. Valve position 1 in Valve V-8.

4 Installation

Mounting the V-8

The valve is fixed in place by screwing the support rod into the valve body and attaching the rod to a laboratory rack. If the valve must be held in place more rigidly, a mounting screw is also supplied.

The mounting screw is used in the following manner (Fig 2.):

- 1 Make a small mounting plate (Fig 2.) out of a rigid material i.e. metal, plastic or wood.

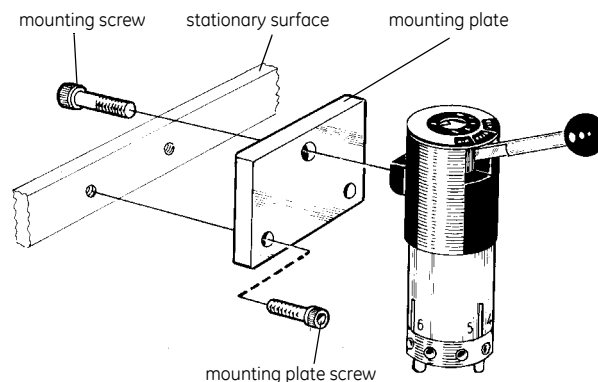


Fig 2. Rigid mounting for Valve V-8.

- 2 Attach this to a flat rigid surface so you can still connect the mounting screw from behind.
- 3 Position the valve on to the front of this plate and attach it with the mounting screw from behind.

An accessory valve holder (Code No. 19-7680-01) is available which specifically complements the Chromatography Rack (Code No. 18-1031-75).



Tubing connection

In FPLC™ System, a tubing connection consists of three parts: flanged tubing, nipple and nipple screw (Fig 3.). Capillary tubing with 0.5 mm inner diameter (Code No. 19-7477-01) is supplied in two meter lengths and can be cut to any appropriate length.

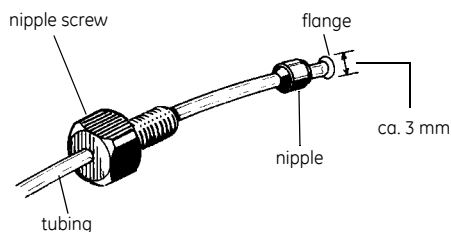


Fig 3. Tubing connection.

For flanging, the Flanging/Start Up Kit, 120 V (Code No. 19-5079-01) or 220 V (Code No. 19-5090-01) is necessary. Tubings and instructions for use are supplied with this kit.

If you are using tubing other than that supplied, the flange should have a flat, smooth surface and a diameter of approximately 3 mm.

When connecting the tubing to the valve ports, finger tighten the tubing connectors into the valve body and then turn them a further 90° with the plastic wrench supplied.

Note: Do not use standard wrenches to tighten the tubing connectors. Do not overtighten the tubing connectors, they are designed to seal up to 100 bars when flanged properly. If the connector leaks after it has been tightened with the plastic wrench, check the flange and make a new one if needed.

5 Operation

Position changes

Once the valve is mounted securely, valve position changes are made quite easily. To change position, push the lever up and further to the desired position and then push it back down into its safety position. The stops are designed as built-in safety features.

6 Applications

Several examples of Valve V-8 as a select valve are given below. When used in this manner, Valve V-8 condenses laboratory equipment into less physical space and saves time with faster, more efficient change-overs of columns, pumps, detectors, solvents or samples.

Column selection

In Figure 4, two V-8 valves are used to connect eight different columns to a single pump and detector. Every time a position is changed with one V-8, the appropriate change must be made with the other V-8, to have a clear liquid path from the pump to the column and detector.

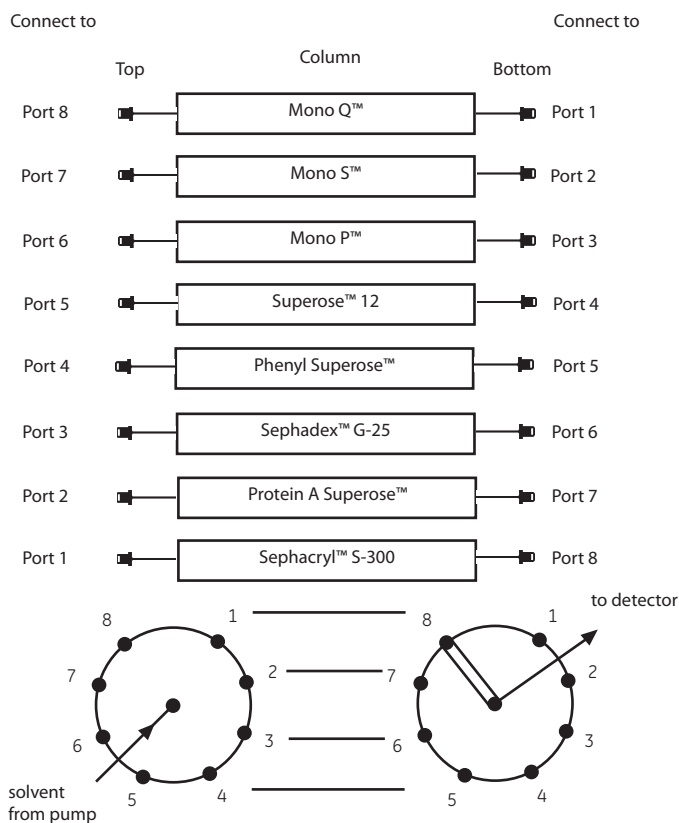


Fig 4. Two V-8 valves used in a chromatography station.

Sample or solvent selection

The set-up in Figure 5 can be used for samples or solvents. When using step gradients or applying diverse samples, just change the valve position for a new solvent or sample.

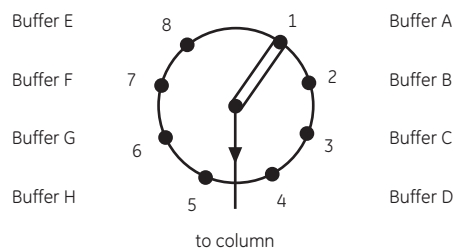


Fig 5. The V-8 used for solvent or sample selection.

Fraction collection

Valve V-8 can also be used to manually collect fractions from an effluent stream. This application is illustrated in Figure 6.

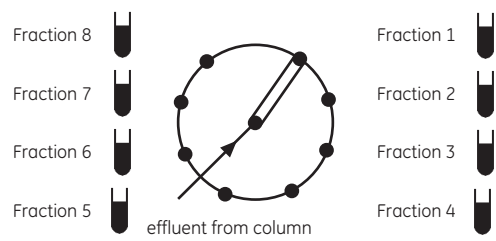


Fig 6. Valve V-8 used for fraction collection.

7 Valve maintenance and repair

The valve can be disassembled for cleaning, or solvents may be pumped through to wash it. Suitable cleaning solvents are water, ethanol, 75% acetic acid, 0.2 M NaOH and detergents.

When using cleaning agents other than water, always rinse the valve with water as the final step.

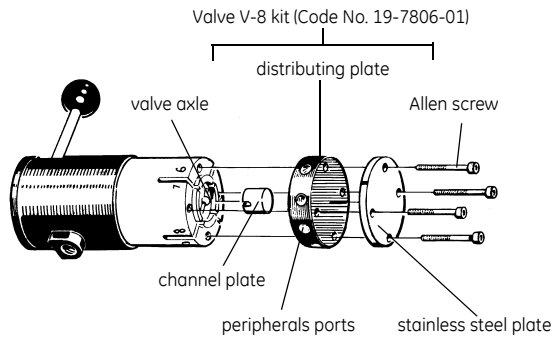


Fig 7. Disassembled Valve V-8.

Disassembly of Valve V-8

- 1 Remove the four Allen head screws on the bottom of the valve. Loosen each one equally in turn so the bottom plate comes off parallel to the valve body.
- 2 Slide these screws out with the bottom stainless steel plate.
- 3 Remove the distributing plate containing the 8 ports.
- 4 Remove the channel plate.
- 5 Place the channel plate and the distributing plate into an ultrasonicator with an appropriate wash solution. These two PEEK parts are also the only parts likely to need replacement. They are supplied together as spare part Valve V-8 kit, Code No. 19-7806-01. Replace these when worn.
- 6 Reassemble the valve. Take care not to overtighten the Allen screws. When reassembling the valve, make sure that the channel plate connects the central port with the peripheral port, number 1.

Spare parts

Designation	Code No.	No. per pack
Valve V-8 kit	19-7806-01	1
Allen screw (M3x20)	19-7564-01	2

Accessories

Designation		Code No.	No. per pack
Capillary tubing (o.d. 1.8 mm, i.d. 0.5 mm)		19-7477-01	2 m
Tubing connectors		19-7476-01	5
Valve holder		19-7680-01	1
Flanging/Start Up Kit	120 V	19-5079-01	1
	220 V	19-5090-01	1
Superloop	10 ml	19-7585-01	1
	50 ml	19-7850-01	1

For contact information for your local office, please visit,
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