OSS-2
OUTLET SPLITTER SYSTEM

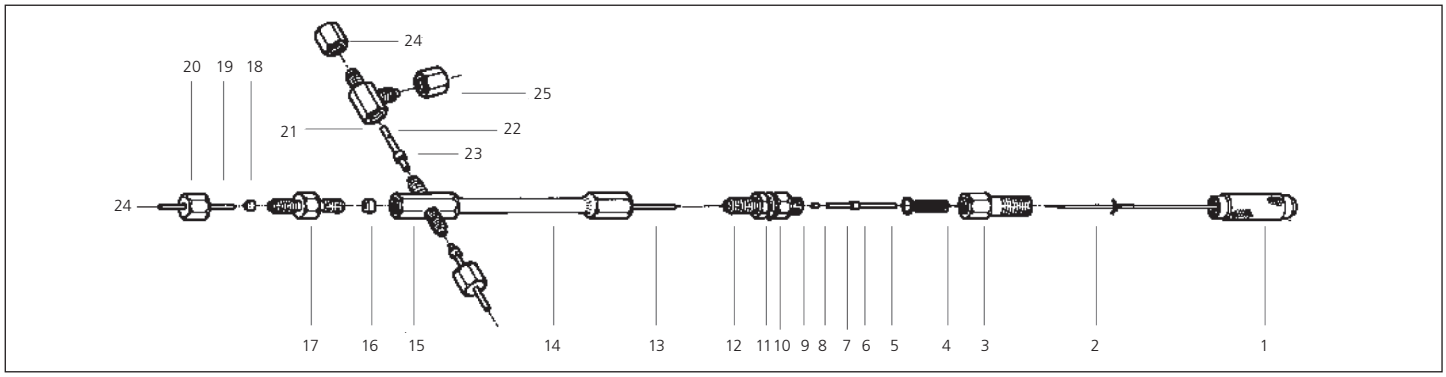

Figure 1. Part No.1236291

INTRODUCTION

This outlet splitter system can be used with all flexible fused silica capillary columns from 0.10 to 0.53 mm ID.

The micro control valve provides a continuously variable range of split ratios, and using different length and ID tubing increases the split ratios achievable.

Closing off the valve, closes the base outlet only. Full flow remains through the side arms. A make up gas tee piece is built into the valve which eliminates potential dead volume problems and allows detector linearity to be maintained.

INSTALLATION OF THE VALVE

Note:

1. Each valve is fitted with a torque limiting control knob which prevents overtightening of the needle and subsequent damage to the valve seat.
2. The stainless steel 1/8" OD stem body (14) and the lower section of the valve where the column and gas connections are made may be heated to 300 °C. However, the control assembly at the top of the valve must be located outside the hot zone and should be positioned so as not to exceed 100 °C.
3. Locate or drill in a suitable position on the chromatograph oven wall, a 4 mm hole for the valve to be located.
4. Use the outer panel, or provide a suitable metal support bracket and drill a 4 mm hole in this also.
5. Loosen the control knob (1) and unscrew the control assembly (1-12) from the valve body.
6. Slacken the sleeve nut assembly (3) and remove the control knob and needle. Caution: The needle is a delicate mechanism, avoid dropping or bending it.
7. Remove the lock nut (11) and washer (10).
8. Insert the stem of the union (12) down through the support bracket or outer panel and replace the washer (10) and lock nut (11).
9. Insert the valve body (14) up through the oven wall and reconnect it to the union stem (12).
10. Make sure that the sleeve nut assembly (3) is loose and then carefully re-insert the control needle and knob.
11. Rotate the knob 3 or 4 turns but DO NOT tighten.
12. Carefully firm up the sleeve nut assembly, until a slight drag is felt when the control knob is rotated.
13. Complete the plumbing of the valve and ensure that the lower outlet (15-20) is gas tight when the valve is closed fully.

When the valve is secured, connect the make-up gas line to the make-up gas tee. The make-up gas tee is built into the valve to eliminate dead volume and allow greater detector sensitivity. The make-up flow will need to be set at approximately 30 ml/min.

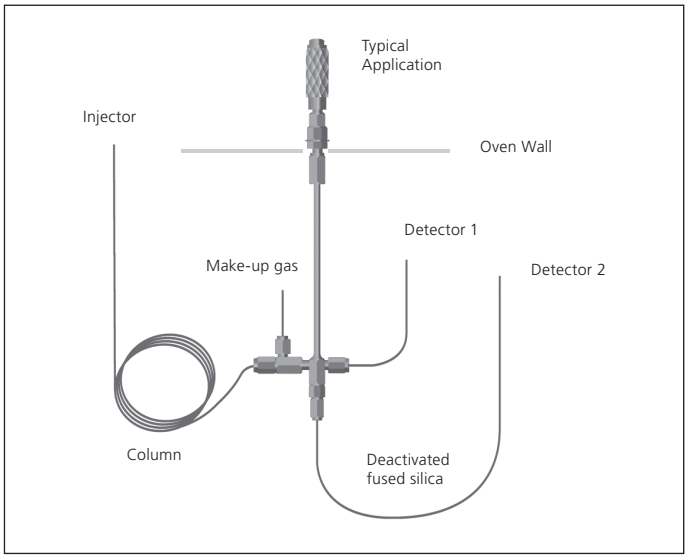

Figure 2. Variable Outlet Splitter for Capillary Columns

OPERATION

The make-up gas tee contains a glass lined insert (22) that has an inside diameter of 0.5 mm. This insert is suitable for smaller ID capillary columns but not for 0.53 mm ID capillary columns. If a 0.53 mm ID column is being used, the insert must be changed for one which has an inside diameter of 0.8 mm. At least 15 mL/min of make up must always be used.

Unscrew the make-up gas tee (21) from the valve and push out the insert (22) contained in the tee. Replace the insert with the 0.8 mm ID insert provided in the kit. There is a slit towards one end of the insert. This should be positioned towards the capillary end of the fitting.

The valve outlet to Detector 1 (fig 2) must always have the lowest flow when the valve is open. The flow to Detector 2 can, in fact, be cut off by closing the valve.

To ensure that a positive flow to Detector 2 is obtained when the valve is opened always ensure that the restriction due to the plumbing between Detector 1 and the valve is greater than that between Detector 2 and the valve.

The split ratio is controlled within a range by manipulating the valve. Further variation is permitted by selecting different internal diameters and lengths for the fused silica transfer tubing used in making connections between the valve and the detectors.

Two lengths of deactivated fused silica tubing are provided (0.32 mm and 0.22 mm ID) which allows a wide range of splits to be obtained.

Note: When connecting fused silica to the bottom entry of the valve, it passes into a glass-lined stainless steel (GLT) liner. The control needle of the valve also enters this liner from the opposite end. To avoid breaking the end of the silica transfer line, make sure the valve is CLOSED before making this connection. Zero Dead Volume Unions and Detector Kits for capillaries are available from SGE.

NEEDLE VALVE CARE & REPLACEMENT

Seal (16) Replacement

With extensive use or from overtightening, the valve may not give adequate sealing and/or flow control due to a worn or damaged valve seat. Spare valve seats (VSV-6) are provided in the kit.

Remove the fused silica flow line (19) and disconnect the double ended union (17). Fully tighten the control knob (1) onto assembly (3). This action pushes the Vespel® seat from a support shoulder inside the valve body (15). To protect needle, unwind the control knob (1) to the extremity of thread on assembly (3). The valve seat (16) should then dislodge from the valve body (15). If not, unscrew (12) from (14) and dislodge seat using seal/seat removal tool provided. Insert the tool through (13) to dislodge seat. To fit seat reconnect (12) from (14) and wind control knob (1) down so that needle (2) protrudes beyond the end of valve body. Place seat (16) on needle (2). Invert valve and again unwind control knob about five turns to allow seat to fall into position. Reconnect double ended union (17) and firmly tighten. Connect flow line (19) and screw on nut (20).

FINER NEEDLE VALVE CONTROL

To obtain finer control at low flows (10-15 mL/min) the following procedure is necessary:

(I) Connect a test gas at approximately 2 atmospheres (30 psi) to side arm.

(II) Close off the other side arm.

(III) Screw down control knob to shut-off point then open one half of one turn. If a flow is detected further, tighten the union (17) until flow stops.

VALVE PTFE SEAL (8) REPLACEMENT

Two spare seals are provided in the unlikely event that a replacement is required. The seal is PTFE tube (1.6 mm OD x 1 mm ID) and is located inside fitting 9 - 12.

The method for replacement is as follows:

- Unwind the control knob (1) to the extremity of thread on assembly (3). Unscrew assembly (3) and withdraw thrust tube (5) and compression spring (4).
- Remove seal (8) with wire tool provided.
- Place new seal into top of male thread (9) and push into place with thrust tube (7). The shorter length beneath the stop (6) on the thrust tube should be pushed into the valve body and when the thrust tube touches the seal the stop should be a nominal 2 mm above the face of the male thread.
- Place compression spring (4) onto other exposed (longer) end (5) of the thrust tube.
- Thread needle (2) into thrust tube and tighten assembly (3).
- Reset control knob.

Parts List	Re-Order Part No.
1 x MCVT/100 (OSS 2)	1236291
1/16" Graphite Vespel® Ferrule with 0.4 mm ID	072663
1/16" Graphite Vespel® Ferrule with 0.5 mm ID	072654
1/16" Graphite Vespel® Ferrule with 0.8 mm ID	072655
1/16" Vespel® Sealing Ring	072653
2 m Deactivated Fused Silica Tubing 320 µm ID	0624470
2 m Deactivated Fused Silica Tubing 220 µm ID	0624469
1/16" x 0.8 mm Tube for make-up gas "Tee" (0.53 columns)	
PTFE Seals	123687
Seal/Seat Removal Tool	
VSV 6 Vespel® Valve Seat	123681

SGE Analytical Science