

Introduction to Manual Valves

High Pressure Switching Valves

Rheodyne offers high pressure manual switching valves to simplify procedures and improve the speed, resolution, and sensitivity of HPLC analysis. The switching valves are available in 316 stainless steel and PEEK, with a choice of 1.6 mm (1/16") or 3.2 mm (1/8") ports.

Column Selection

The six-position switching valves are used in column selection. These valves substitute one column for another without the need to manually disconnect the plumbing. This makes it easy to designate a separate column to each analysis. Designated columns eliminate equilibration delays, reduce interferences, and prolong column life. Turning the valve handle selects the column desired for a particular analysis. The columns switched off-line are automatically sealed at both ends.

Column Switching

The two-position switching valves are used to re-route mobile phase during the chromatographic run without changing separation techniques or to perform sequential separations with different columns and/or mobile phases.

Although the Model 7000 is the most commonly used and versatile switching valve, other models have specific uses such as for three-way or four-way switching patterns.

Many models have flow passages available in both standard bore and large bore, designated with an "L" suffix. L Models use 1/16" fittings and tubing but have larger flow passage diameters than non-L models. L models can accommodate higher flow

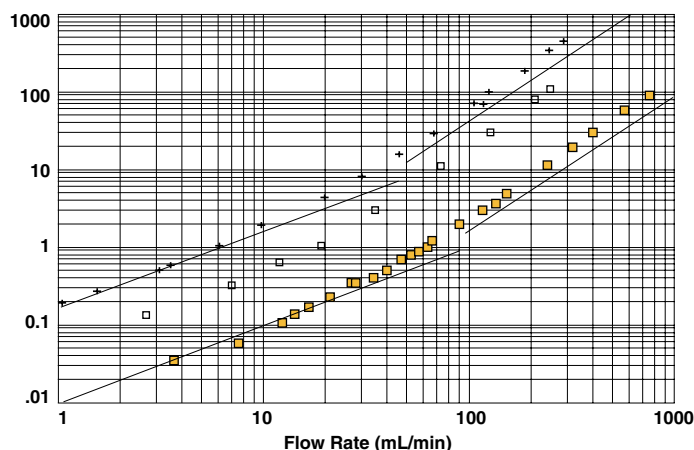


Fig. 1. Pressure drop vs. flow rate for Model 7000 and Model 7000L (large-bore) valves; water at 20°C. Experimental measurements: The flow channel is one stator inlet port, one rotor seal groove, one stator outlet port, and two connecting tubes. Solid squares = (1.0 mm 7000L valve) + (two 1.0 mm x 5.0 cm tubes). Open squares = (0.6 mm 7000 valve) + (two 1.0 mm x 5.0 cm tubes). Cross mark = (0.6 mm 7000 valve) + (two 0.5 mm x 5.0 cm tubes). Solid lines are theoretical values for 10 cm long tubes of 1.0 mm and 0.5 mm ID. Pressure drop is in units of psi. 1.0 MPa = 10 bar = 145 psi.

rates. Large bore tubing can be used when the pressure drop must be limited. Large bore valves have a lower pressure drop than standard bore valves when both valve sizes accommodate the same flow rate.

There are also models manufactured in titanium. Consult your authorized Rheodyne distributor for these options.

Table II. Specifications of Rheodyne Manual Switching Valves.

MODEL	STATOR PASSAGE DIAMETER	FACTORY SET PRESSURE	MAXIMUM FIELD SET PRESSURE	MAXIMUM TEMPERATURE
7000, 7030, 7040 (SST & Titanium)	0.6 mm (0.024")	34 MPa (340 bar, 5000 psi)	48 MPa (483 bar, 7000 psi)	150°C*
7060 (SST)	0.4 mm (0.016")	34 MPa (340 bar, 5000 psi)	48 MPa (483 bar, 7000 psi)	80°C
7000L, 7030L, 7040L, 7060L (SST & Titanium)	1.0 mm (0.040")	21 MPa (207 bar, 3000 psi)	34 MPa (340 bar, 5000 psi)	150°C* (7060L: 80°C)
7610-400 (SST)	0.6 mm (0.024")	34 MPa (340 bar, 5000 psi)	34 MPa (340 bar, 5000 psi)	50°C
7610-600 (PEEK)	0.6 mm (0.024")	34 MPa (340 bar, 5000 psi)	34 MPa (340 bar, 5000 psi)	50°C
9010, 9030, 9060 (PEEK)	0.4 mm (0.016")	34 MPa (340 bar, 5000 psi)	34 MPa (340 bar, 5000 psi)	50°C
3000, 3030, 3060 (PEEK)	1.0 mm (0.040")	21 MPa (207 bar, 3000 psi)	28 MPa (276 bar, 4000 psi)	50°C
3000-038, 3030-038, 3060-038 (SST)	1.0 mm (0.040")	28 MPa (276 bar, 4000 psi)	34 MPa (340 bar, 5000 psi)	50°C

SST = Stainless Steel PK = PEEK * Titanium valves have a maximum temperature of 50°C, due to the Tetzel rotor seal.