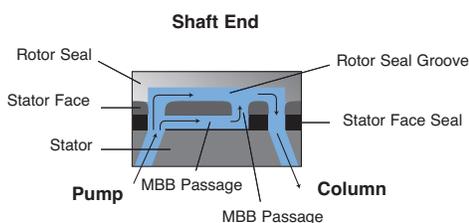


1.0 DESCRIPTION

Rheodyne's Model 7710 is a two-position, six-port sample injection valve in which sample is loaded into the stator end of the valve through an autosampler. The Model 7710 constructed of 316 stainless steel.

Figure 1 shows the flow diagram of the valve. The circles represent the ports in the valve stator. The dark and white grooves represent the connecting passages in the rotor seal. The dotted flow passage represents the Make-Before-Break (MBB®) valve design.

Figure 2 shows a detailed cut-away view of the MBB design.



The MBB valve architecture allows uninterrupted flow as the valve switches from LOAD to INJECT. The mobile phase continuously flows through both the rotor seal groove and the MBB passage until rotation stops. See Figures 1 and 2.

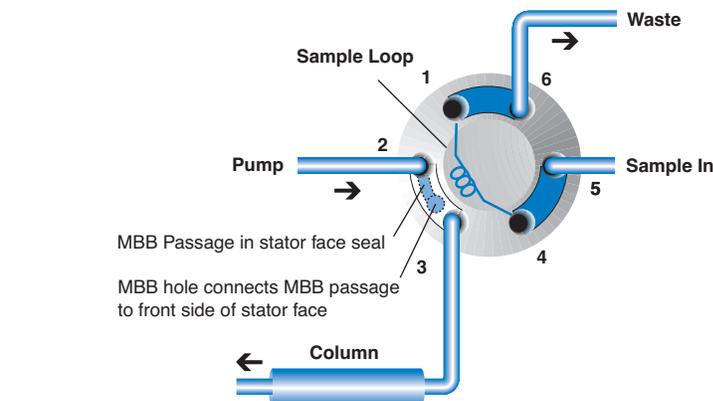
2.0 SUPPLIED WITH THE VALVE

- Hex Key(s)
- Mounting Screws

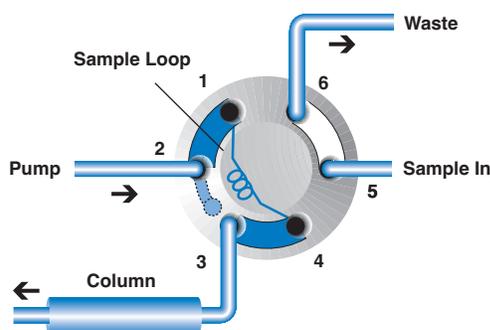
3.0 SPECIFICATIONS

The sample loop is loaded at the stator end of the valve in the LOAD position. Rotation of the valve shaft through 60° switches the valve from LOAD to INJECT.

- Maximum Operating Pressure: 48 MPa (483 bar, 7000 psi).
- Wetted Surfaces: 316 stainless steel, an inert polymer, and alumina ceramic.
- Flow Passages Diameters (Stator and Rotor Seal): 0.6 mm (0.024") and 0.5 mm (0.018").
- Maximum Operating Temperature: 150°C.



Position 1 (LOAD)



Position 2 (INJECT)

Fig. 1. Model 7710 contains Rheodyne's patented MBB valve design.

- 2 μ L internal sample loop (P/N 7755-015) is available and can be installed inside the injector in place of the stator face assembly

4.0 ADJUSTING FOR HIGHER PRESSURE OPERATION/LEAKAGE

There is a single pressure adjusting nut at the shaft end of the valve body. If you need operation up to a higher pressure or if there is a leak between the stator and stator ring, tighten the adjusting nut about 1/20th turn. Use the 20 dial markings on the body and the painted spot on the adjusting screw as guides, see Figure 3.

If there is still leakage at this new setting, repeat the process. Replace the rotor seal if the leak continues.

5.0 MAINTENANCE

The only parts that may need eventual replacement are the rotor seal and stator face assembly. Genuine Rheodyne parts are easily replaced by following the instructions in this section.

A main cause of early failure is abrasive particles in the sample that can scratch the

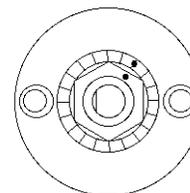


Fig. 3. Guides on adjusting nut and body.

rotor seal surface and stator face assembly.

5.1 DISASSEMBLY

To disassemble the valve, refer to Figure 4 and proceed as follows:

- Remove the three stator screws.
- Remove the stator, stator face assembly, and stator ring from the body.
- Pull the rotor seal off the pins.
- Remove the isolation seal. **NOTE:** The isolation seal may have remained in the stator ring.

5.2 REASSEMBLY

To reassemble the valve, proceed as follows and refer to Figures 4 and 5:

- Mount the new isolation seal with the open side facing away from the rotor seal.
- Mount the new rotor seal. The correct orientation of the rotor seal is shown in Figure 5. The notch on the metal band around the rotor seal is lined up 180° from the flat side on the shaft assembly.
- Replace the stator ring so that the pin in

the 60° stop ring enters the mating hole in the stator ring.

d) Put the stator face assembly on the stator. The three pins on the assembly fit into the mating holes in the stator only one way.

e) Replace the stator and stator face assembly on the valve so that the pin in the stator ring enters the mating hole in the stator.

f) Replace the stator screws. Tighten each screw a 1/2 turn past fingertight.

6.0 OPERATING SUGGESTIONS AND TROUBLESHOOTING

6.1 LEAKAGE

If you see liquid between the stator and stator ring, tighten the pressure adjusting nut as explained in Section 4.0. Replace the rotor seal and/or the stator face assembly if the leak continues.

6.2 USE OF AQUEOUS BUFFERS OR SALT SOLUTIONS

To prevent the formation of salt crystals in

the valve, flush out the flow passages with water after using salt solutions.

6.3 USE OF HIGH pH SOLUTIONS

The standard rotor seal in Model 7710 is Vespel¹, which has exceptionally good wear resistance. However, Vespel is susceptible to alkaline attack, deteriorating rapidly when used with solutions of pH over 10. Model 9710 has a PEEK rotor seal.

PEEK and Tefzel¹ both tolerate the entire pH range, from 0 to 14, and are available for alkaline applications.

7.0 RECOMMENDED SPARE PARTS

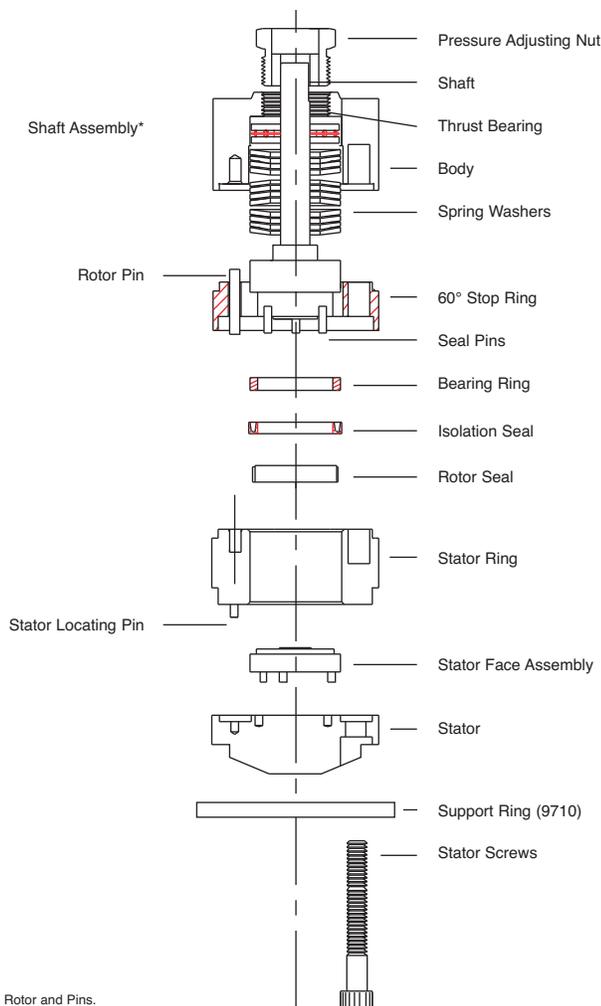
7010-039 Vespel Rotor Seal (standard)

7010-071 Tefzel Rotor Seal

9010-065 PEEK Rotor Seal

8.0 WARRANTY

All Rheodyne products are warranted against defects in materials and workmanship for a period of one year following the date of shipment by Rheodyne. Rheodyne will repair or replace any Rheodyne product that fails during the warranty period due to a defect in materials or workmanship at no charge to the customer. The product must be returned to Rheodyne's factory in original packaging or equivalent, transportation prepaid. Damage occurring in transit is not covered by the warranty. This limited warranty is Rheodyne's sole warranty of its products, and all other warranties of merchantability or fitness for any particular purpose are hereby disclaimed. Under no circumstances will Rheodyne be liable for any consequential or



* Shaft Assembly Includes Shaft, Rotor and Pins.

Fig. 4. Exploded view of Model 7710.

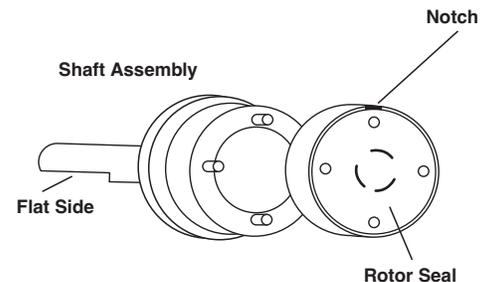


Fig. 5. Correct alignment of rotor seal.

incidental damages attributable to a claimed failure of a Rheodyne product, even if Rheodyne has been placed on notice of possibility of such damages.

¹ Vespel and Tefzel are trademarks of E.I. DuPont