

# OPERATION NOTES & CLEANING INSTRUCTIONS W & UW TYPE VALVES

## Technical Note 201

### INITIAL PRECAUTIONS

After unpacking the valve, do not remove the protective tape from the valve ports until you are ready to install the valve. As supplied, all surfaces are clean and free of contaminants, and must be kept clean to prevent valve damage. Open ports and fittings cause unnecessary risk of particulate matter entering the valve and scratching the sealing surfaces, which is the most frequent cause of premature valve failure.

**NOTE:** The most common source of particulate and chemical contamination is tubing which has not been properly cleaned before installation in the valve. To avoid this problem, we suggest purchasing our electrolytically pre-cut and polished tubing, available in standard lengths for any plumbing requirement. If other tubing is to be used, make certain that all tubing ends are free of burrs and cut square with the tube axis, and that all tubing has been chemically and mechanically cleaned.

**CAUTION: Failure to observe proper cleanliness procedures during installation of the valve voids the manufacturer's warranty.**

To ensure minimum connection volume, make certain that tubes are seated completely before forming the ferrule on the

### DISSASSEMBLY

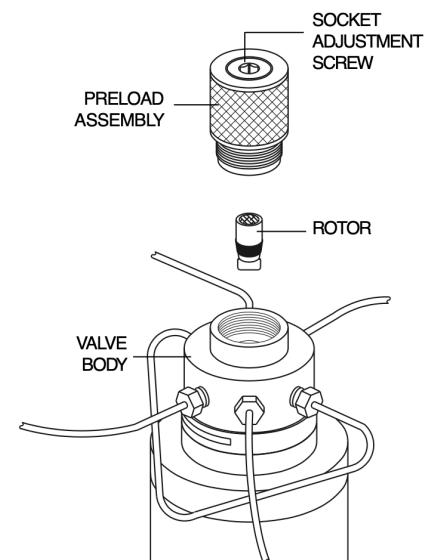
**CAUTION: Do not disassemble the valve unless the system malfunction is definitely isolated to the valve: perform all other system checks first. If disassembly is required, make certain that the following instructions are carefully observed.**

Disassembly operations must be performed in a clean, well-lighted area. Flush all hazardous or toxic materials from the valve before starting. *Please read through the entire procedure before beginning.*

As **Figure 1** illustrates, an advantage of this design is that the valve can be disassembled without removing the loops and tubing from the valve or removing the valve from the actuator or mounting bracket.

1. When the valve is cool enough to be handled, unscrew the entire knurled pre-load assembly. (The pre-load threads may gall if this is attempted while the valve is hot.) Do not tamper with the preset socket adjustment screw.

**FIGURE 1: Dissassembly**



- Engage the end of the rotor (**Figure 2**, next page) with a pencil-type magnet, available from VICI Valco or any electronic components supplier. Cycle the valve one time to break the “shear seal” between the rotor and the valve body.

**CAUTION: Any contact between the interior of the valve body and the metal of the rotor or any tool used is likely to cause damage.**

- Carefully withdraw the rotor from the valve body with the magnet. Once the rotor is removed, note the orientation of the rotor tab, which is marked with an ID letter denoting the type of seal material.

## CLEANING THE VALVE BODY

- Wet a cotton swab with a solvent which is compatible with the chromatographic system. Isopropyl alcohol is recommended.
- Gently swab the polished interior of the valve to remove any loose residue.
- Blow with clean compressed gas to remove any lint left by the swab.
- Visually inspect the interior of the valve body. The conical surface should appear highly polished. If any scratches are visible between the ports or anywhere which might suggest a potential leakage path or wear source, the valve should be returned to the factory for regrinding and polishing.

## CLEANING THE ROTOR

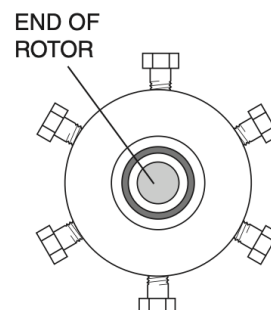
- Carefully grasp the tab end of the rotor, being careful not to mar the metal or touch the polymer. If it is difficult to grip the rotor securely, hemostats or needle-nosed pliers may be helpful (**Figure 3**). Briefly immerse it in solvent.
- Gently wipe the polymer with a clean tissue.
- Blow with clean compressed gas to remove any lint left by the tissue.
- Visually inspect the rotor. If it shows any scratches and/or a narrowing of the flow passages, replacement is necessary.

## ASSEMBLY (NEW OR USED ROTOR)

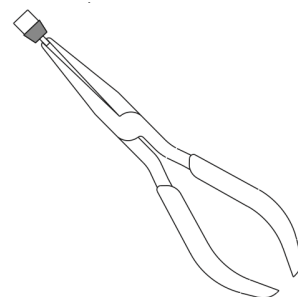
- Place the clean rotor on the pencil magnet and orient it so that the tab will properly engage the slot of the drive mechanism. The list in **Figure 5** shows how to orient the ID letter for different Valco valves (a C6W is shown in **Figure 4**).
- Insert the rotor into the valve body, again being careful that the tab doesn't touch the polished interior of the valve body. Make sure the rotor tab (**Figure 4**) is fully inserted into the slot in the driver. Using a pencil or other small pointed object, hold the rotor in place in the valve body while the magnet is pulled free.
- Replace the knurled pre-load assembly, tightening it into the valve body one turn beyond the point where it first touches the rotor. Cycle the valve 10 times to seat the sealing surfaces, leaving the valve fully in its clockwise or counterclockwise position.
- Tighten the pre-load until it is fully bottomed-out, and cycle the valve a couple of more times.

**CAUTION: Make sure that the valve is never left partially actuated. It must always be left in either its fully clockwise or fully counterclockwise position.**

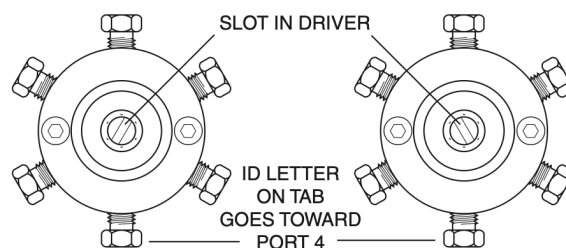
**FIGURE 2: Valve with preload removed**



**FIGURE 3: Holding the rotor**



**FIGURE 4: C6W valve with preload and rotor removed, viewed from preload end**



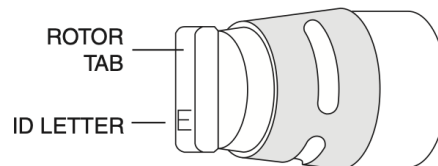
- High temperature valves require conditioning when the rotor is replaced (see next section).

### CONDITIONING PROCEDURE FOR HIGH TEMPERATURE VALVES

The rotor material in WT and UWT valves sometimes (usually at lower temperatures) develops a tendency to stick, making the valve difficult to turn. This can usually be eliminated by repeating a conditioning procedure initially done at the factory. With oxygen-free carrier gas flowing through all the ports, rapidly heat the valve to 325°C. When 325°C is reached, cycle the valve 10 times and let it cool to operating temperature.

NUMBER OF PORTS	ID LETTER TOWARD
3	Port 2
4	Port 3
6	Port 4
8	Port 5
10	Port 6
Internal sample	The side of the valve with the four ports

**FIGURE 5: Location and orientation of the ID letter**



### SPECIAL INSTRUCTIONS FOR HIGH PRESSURE W AND UW VALVES

A simple procedure added to the rotor replacement instructions will often enhance the performance of valves tensioned for use at over 1000 psig. Refer to Step 3 in the section titled Assembly, superseding it with:

- Replace the knurled pre-load assembly, tightening it into the valve body by hand just beyond the point where it touches the rotor. Cycle the valve 10 times to seat the sealing surfaces, leaving the valve fully in its clockwise or counterclockwise position.
- Tighten the pre-load in quarter-turn increments, cycling the valve 10 times after each step. The pre-load must end up fully bottomed-out, but attempts at further tightening will not affect the sealing forces.