

CHEMINERT® MODELS CN2 & CN4 CLEANING AND ROTOR REPLACEMENT

Technical Note 813

Cheminert® CN2 and CN4 valves are designed with proteomics and drug discovery in mind. With a standard flowpath diameter of 100 microns (0.004"), port-to-port volume is less than 25 nL.

To minimize dead volume in the ports and to facilitate fitting make-up, these valves utilize a unique one-piece fitting. See Technical Note 507 for instructions on the Cheminert® One-Piece 1/32" Nanovolume™ Fitting.

NOTE: Use only Cheminert® one-piece 1/32" nanovolume fittings in CN2 and CN4 valves. Use of standard Valco 1/32" zero dead volume nuts and ferrules could result in damage to the valve fitting details. We also recommend the use of polymeric or fused silica tubing for connecting to the valve; metal tubing is not recommended.

INITIAL PRECAUTIONS

After unpacking the valve, do not remove the protective cap or 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.



WARNING: The most common source of particulate and chemical contamination is tubing which has not been properly cleaned before installation in the valve. Failure to observe proper cleanliness procedures during installation of the valve voids the manufacturer's warranty.

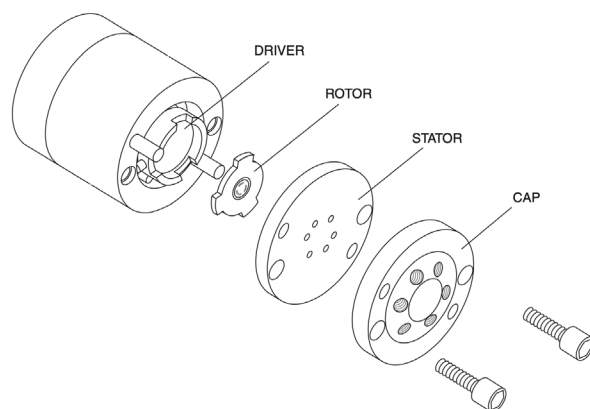
CLEANING

Cleaning a valve can often be accomplished by flushing all the lines with appropriate solvents. Do not disassemble the valve unless system malfunction is definitely isolated to the valve. In particular, do not remove the valve from the actuator unless it is absolutely required. Getting the valve and actuator realigned properly can be problematic; with a .004" flow path, there is very little room for error.

DISASSEMBLY (REFER TO FIGURE 1)

1. Use a 9/64" hex driver to remove the socket head screws that secure the cap and stator to the valve body. Start by alternating between the two screws, loosening them in quarter-turn (90°) increments until all load is removed.
2. The cap has one polished sealing surface on the bottom and the stator has sealing surfaces on its top and bottom. To insure that the sealing surfaces are not damaged, rest the cap on its top face and rest the stator on a clean soft surface.
3. With your fingers or a small tool, gently pry the rotor away from the driver.
4. Examine the rotor sealing surface for scratches. If you see any, the rotor must be replaced.
5. Examine the stator and cap sealing surfaces. If scratches are visible between the ports, that part must be replaced or resurfaced. Call Valco for help in determining if resurfacing is feasible.
6. Clean all the parts thoroughly with an appropriate solvent, taking care that no surfaces get scratched. (A common problem with HPLC is the formation of buffer crystals, which are usually water-soluble.) It is not necessary to dry the rotor.

FIGURE 1: Exploded view of a Model CN2



REASSEMBLY

1. Replace the rotor in the driver, making sure that the rotor sealing surface with its engraved flow passages is facing out. The tabs on the rotor have an asymmetrical pattern to prevent assembly with improper orientation.
2. Replace the stator onto the body, making sure that the top side faces out. The two sides can be distinguished by the fact that the bottom has smaller holes and the top has larger conical holes.
3. Replace the cap. Insert the two socket head screws and tighten them gently until they start to get snug. Then alternate between the two screws, tightening them in quarter-turn (90°) increments until the stator is flush against the valve body and the cap is flush against the stator.

Do not overtighten the screws – they simply hold the assembly together and do not affect the sealing force, which is automatically set as the screws close the cap and stator against the valve body.

4. Test the valve by pressurizing the system. If it doesn't hold pressure, the valve should be returned to Valco for repair.