

AIR ACTUATED VALCO ON/OFF VALVES INSTALLATION & OPERATION

Technical Note 607

DESCRIPTION

Valco high-pressure on/off valves feature quality engineering, precision machining, and extremely low internal volume (< 2 μ l), making them the ideal choice in the most demanding liquid or supercritical fluid chromatography or extraction systems. When used in the prescribed manner, they offer years of trouble-free service.

The long lifetime is accomplished by minimizing wear materials in the flowpath; we start with naturally hard materials and then further harden them before incorporating them in the valve. (The materials listed in the last column of the table below are for the seal which isolates the valve flowpath from the standoff and actuator assembly.) The seat is machined out of the body material, then deburred with a special abrasive fluid. After that, a cold-forming process tempers the stainless steel seat to increase its hardness. The stainless steel needles undergo a special roller burnishing process to increase the hardness of the needle point, and cobalt alloy needles are polished to a finish of less than 2 μ -inch.

CONFIGURATIONS

Air actuated on/off valves come with a choice of two tubing connection sizes (1/16" and 1/8"), three standoff lengths (1", 2", and 4"), and two temperature ranges. The following table delineates all of the options, and also describes the various needle and sealing materials for each model.

PART NO.	CONNECTION	BORE (mm/in)	MAX TEMP (°C)	MAX PRESS (psi)	STAND-OFF (in)	NEEDLE MATERIAL	SEAL MATERIAL
ASFVO	1/16"	0.50/0.020	100	10,000	1	Cobalt alloy	PAEK/TFE
ASFVOL	1/16"	0.75/0.030	100	10,000	1	Cobalt alloy	PAEK/TFE
ASFVOHT	1/16"	0.50/0.020	300	6,000	2	Cobalt alloy	Polyimide
ASFVOLHT	1/16"	0.75/0.030	300	6,000	2	Cobalt alloy	Polyimide
ASFVOHT4	1/16"	0.50/0.020	300	6,000	4	Cobalt alloy	Polyimide
ASFVOLHT4	1/16"	0.75/0.030	300	6,000	4	Cobalt alloy	Polyimide
ASFVO2HT	1/8"	1.50/0.060	300	2,000	2	316 ss	Polyimide
ASFVO2HT4	1/8"	1.50/0.060	300	2,000	4	316 ss	Polyimide

The standard configuration has the input port of the actuator aligned so that it is parallel to the outlet port of the valve. The valve can be ordered so that the actuator inlet is rotated in 90° increments. Viewed with the actuator toward you and the valve away from you, the actuator can be rotated clockwise 90°, 180°, or 270° by adding a "1", "2", or "3", respectively, to the end of the standard part number. Examples: ASFVO1 (90°) and ASFVOLHT43 (270°)

Caution: Actuator rotation should not be attempted by the user. Any alteration of the actuator or valve will cause failure and void the warranty.

MOUNTING INSTRUCTIONS

Conventionally, there are four different mounting methods for Valco On/Off valves:

- 1. PREFERRED METHOD:** Using the clamp ring provided, attach the ring with the socket head screws provided to a panel or bracket. Then slide the hub of the actuator through the clamp ring and tighten the clamp ring screw to hold the valve.
2. Remove the clamp ring and attach the actuator directly to a panel or bracket using the threaded holes in the back of the actuator.
Caution: Do not use screws that are too long. This will bottom out the screw into the piston and the valve will not open. If over tightened, this will destroy the valve seat and cause valve failure.
3. High temperature valves can be mounted to a single valve heater block via the hub on the valve.
- 4. 1/16" versions ONLY:** Mount with the two holes located in the valve body itself. There is clearance for #6 screws.

AIR ACTUATION

These valves use air (40 - 60 psi) to counteract the spring force that keeps them closed. Actuation air is supplied through the 1/8" tube fitting on the cylindrical actuator.

Filtration

All actuation air supply lines must be filtered to remove particulates. Any particles entering the valve will greatly decrease its sealing effectiveness.

As of this writing, the exact minimum time to open and close the valve has not been established, but they have been successfully operated at several Hertz (1/sec). If actuation is too slow, it's possible that the air supply system is retaining pressure. (If the overall air supply system doesn't vent quickly enough, residual pressure can make it more difficult for the spring force to close the valve.) This problem is more likely to occur with higher actuation pressures.

MAINTENANCE

These valves are precision engineered, aligned, and assembled to achieve the high degree of performance that they deliver. They are not designed to be altered or disassembled in any way by the user, and doing so voids the warranty.

