

TWO POSITION STANDARD ELECTRIC ACTUATOR

Technical Note 417

DESCRIPTION

VICI Valco and Cheminert® two position valves are widely used in a variety of sample injection and switching applications. The valves can be switched manually, with an air actuator, with a standard electric actuator, or with a microelectric actuator. The standard electric actuator is the ideal choice if you wish to automate valve switching with contact closure and don't require the additional features of the microelectric actuator (i.e., automatic alignment, RS-232, compact size).

Valco standard electric actuators are available in 110 VAC, 220 VAC, and CE-compliant 24 VDC models for any 30°, 36°, 45°, 60°, or 90° two position valve. The model numbers of the actuators are respectively E30, E36, E45, E60, and E90. (Add -220 for 220 VAC models and -CE for 24 VDC models.) An electric actuator can be retrofitted to existing air actuated or manual valves, and is compatible with all Valco and Cheminert two position close mount and standoff assembly hardware.

The two position standard electric actuator is a complete system consisting of (a) the motor assembly with power cord, (b) a control box with LED display, and (c) an interface cable for remote switching. The actuator as normally supplied will move the valve from Position A to Position B in 0.56 seconds. All standard electric actuator models use separate line voltages and therefore require no power from the chromatograph with which they are used.

MANUAL USE OF THE TWO POSITION VALVE ACTUATOR

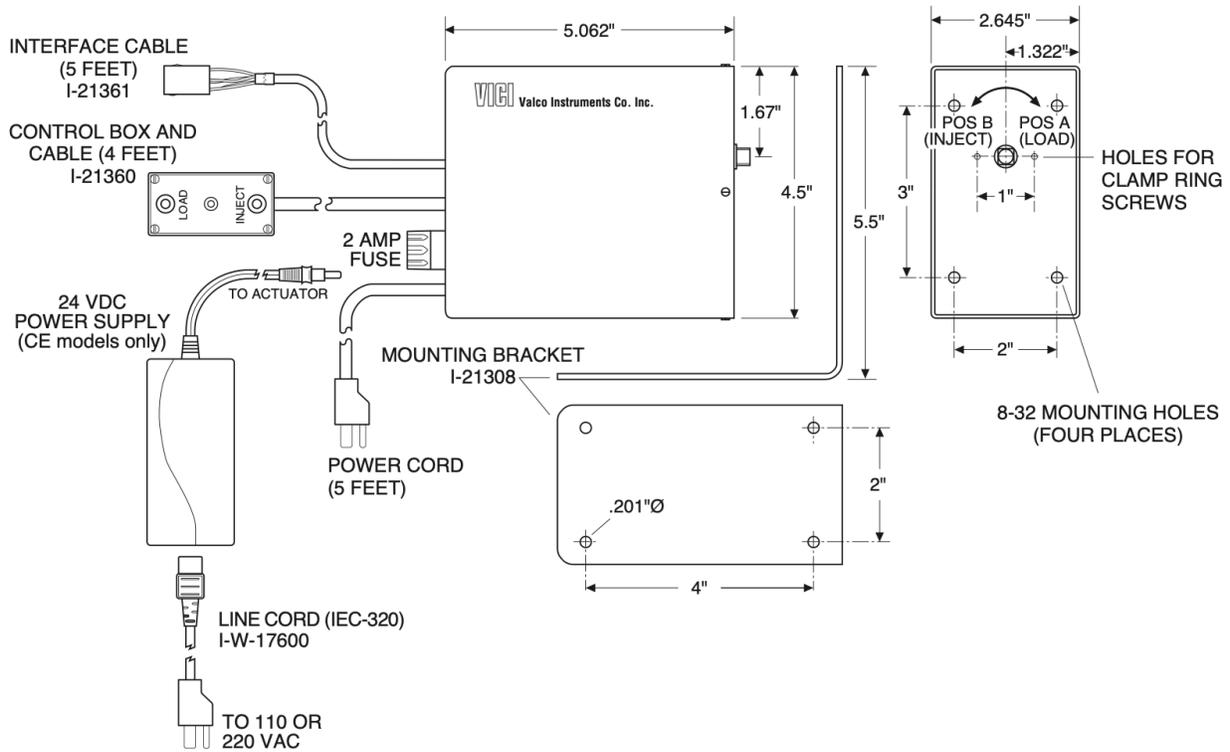
The electric actuator has a control box with a two position spring-loaded (normally off) toggle switch and two LEDs that indicate the current valve position. The valve can be moved from one position to the other by manually moving the toggle switch toward the light that is not illuminated.

CONTROLLING THE ACTUATOR WITH A COMPUTER

Automated operation of the actuator requires a data system capable of generating a momentary or continuous contact closure or a negative true logic level signal. The signal or contact closure is communicated to the actuator through the interface cable, which can also supply feedback from the actuator or transmit a contact closure upon injection. (The actuator leaves the factory in the contact closure-upon-injection mode; for information on changing it to the feedback option, see the next page.)

NOTE: Since the input signal must be of 10 to 20 milliseconds duration to switch the actuator, a sub-millisecond noise spike will not start the actuator.

Figure 1: Actuator mounting dimensions



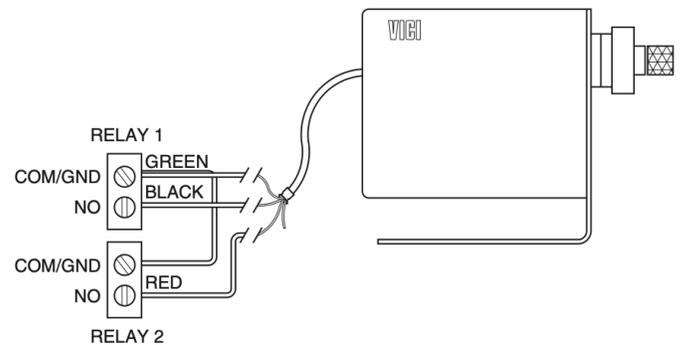
Using a Relay Output

Two Relays

If the data system has two relays available, then one relay can be dedicated to each position of the actuator. This is ideal, since it allows the manual switch to function normally.

Connect the black wire (INJECT) to the normally open (NO) terminal of the first relay, and the green wire (GROUND) to its common or logic ground terminal. Connect the red wire (LOAD) to the normally open (NO) terminal of the second relay, and connect a jumper wire from the common or logic ground of the first relay to that of the second (**Figure 2**).

Figure 2: Dual relay connection



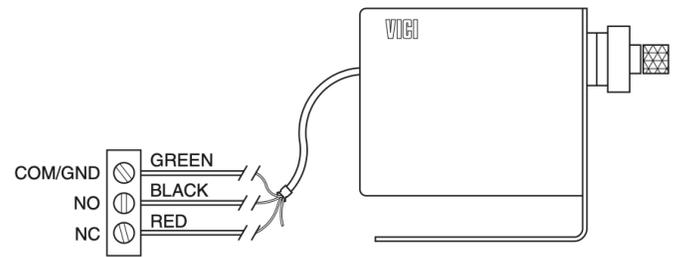
Program the data system to energize the first relay when the valve is to be switched to the INJECT position, leaving it energized for only two or three seconds. Likewise, at the time for LOAD, energize the second relay for a few seconds. When neither relay is energized, the manual toggle switch can be used as described on the previous page.

NOTE: If the valve will not move out of a position, it is most likely that the relay that switched it to that position has not been turned off. The INJECT relay must be turned off before the LOAD relay is turned on, and vice versa.

Single Relay

If the data system has only a single double-pole relay with normally open (NO) and normally closed (NC) terminals (**Figure 3**), connect the green wire (GROUND) to the relay common or logic ground. Connect the black (INJECT) wire to the normally open (NO) relay terminal and the red (LOAD) wire to the normally closed (NC) terminal. The computer must be programmed to keep the normally open (NO) relay contact energized as long as the actuator is to remain in the INJECT position.

Figure 2: Single relay connection



Using a Logic Level Output

If the data system uses negative true logic level output, connect the green wire (GROUND) to the Logic Ground of the data system. Connect the red wire (LOAD) to one output and the black wire (INJECT) to the other output. Turning the output off will switch the actuator to LOAD and turning it on will switch it to INJECT. If the operations are reversed, simply switch the connection of the red and black wires or reverse the output programming.

Using the Output from the Actuator

The white and clear wires of the interface cable can perform either of two functions, depending on the setting of the dipswitch on the circuit board. The factory setting is for Inject Contact Closure mode.

Inject Contact Closure Mode

In this mode, which is the factory default, the white and clear wires provide a contact closure (approximately two seconds long) when the actuator moves to the INJECT position. It may be used to “spike” a recorder or to start any device equipped with a remote contact closure input.

Positive Position Feedback

In this mode, the clear wire carries a logic high when the actuator is in Position A (LOAD), and the white wire carries a high when the actuator is in Position B (INJECT). To change the setting to this mode, refer to the Two Position Electric Actuator Instruction Manual in the support section of our website at www.vici.com. Begin with section 3.32, which directs you to disassembly instructions and a drawing showing the location of the switch.

FURTHER REFERENCE

Our website contains a wealth of technical information about actuators, valves, fittings, and every- thing else Valco makes. If you have questions not answered in this technical note, please refer to the support section of www.vici.com, which contains technical notes, instruction manuals, and application notes. The following are of particular interest to users of the Two Position Standard Electric Actuator:

For valve alignment instructions:

Technical Note 101: Valve Alignment Troubleshooting

For valve installation instructions, actuator modification instructions, and technical drawings:

Two Position Standard Electric Actuator Instruction Manual