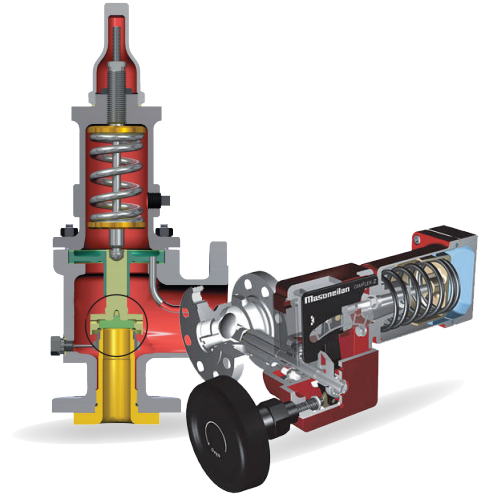


# CONTROL VALVE TROUBLESHOOTING

A typical control valve has many moving parts and pinpointing the exact cause of a problem can be challenging. However, understanding common issues and knowing how to troubleshoot effectively can help diagnose and resolve problems more quickly, below, we will break down some frequent control valve issues and provide guidance on how to address them.



## 1. Seat Leakage

Seat leakage is one of the most common control valve issues. It can be tricky for several reasons, including variations in allowable leak rates depending on the valve's seat type, CV, leakage class, and size. When troubleshooting seat leakage, consider the following:

### A. Confirm the Valve is Seating Properly

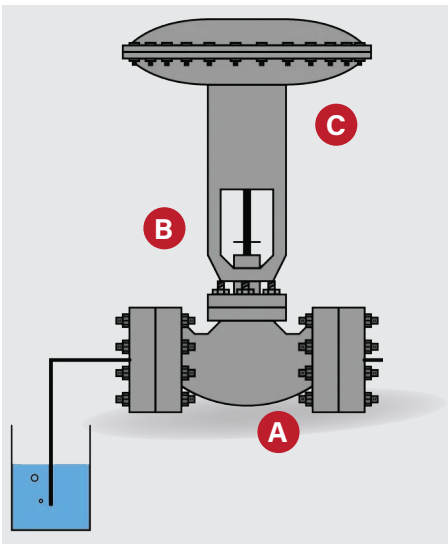
The first step is to verify that the valve is seating correctly. Visually check whether the valve is fully closing when commanded to. If the valve appears to be fully closing, it might indicate a damaged or worn valve plug or seat.

### B. Check Positioner Calibration

Ensure that the valve is calibrated properly. For air-to-open valves, for example, when a 4mA signal is provided, the output gauge should read 0 psi. If there is any output at the low end of the signal, it could indicate poor calibration, meaning the valve is slightly open when it should be fully closed.

### C. Verify Valve Sizing

Ensure that the valve is appropriately sized for the application. Check the process conditions against the valve sizing report to ensure that the pressure and flow rates aren't exceeding the valve's specifications. This is especially important if any process changes have occurred since the valve was installed.



## 2. Valve Won't Move

If the valve isn't moving as expected, the problem could be internal (blockages, galling, or misalignment), or it could be related to the actuator or positioner. Here's how to troubleshoot:

### A. Test the Actuator Movement

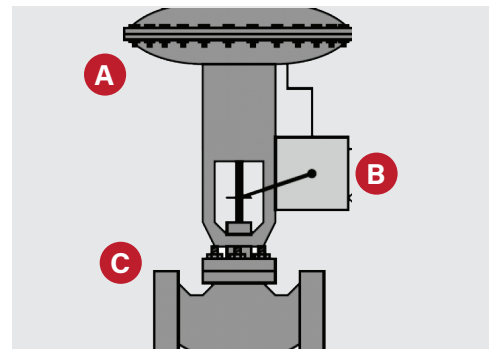
To check whether the actuator is the problem, uncouple it from the valve and try moving it. If the actuator moves freely, the problem likely lies with the valve or positioner.

### B. Check the Actuator Supply Pressure

Make sure the actuator is receiving the correct supply pressure. If the actuator has a leak, it will be easier to identify externally. If there is no visible external leakage but the valve still doesn't move, internal leakage could be the cause (e.g., through the diaphragm or piston seals).

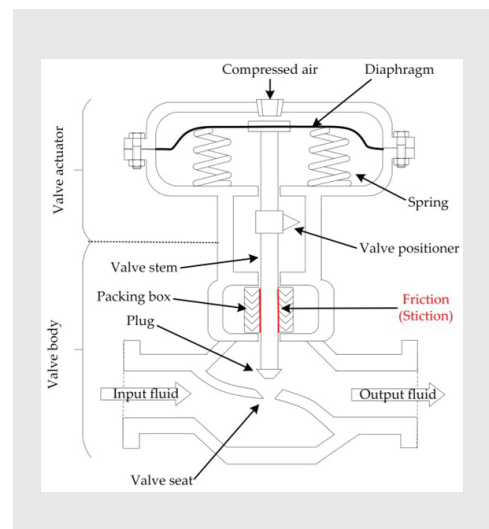
### C. Verify Positioner Functionality

Check the positioner to ensure it's functioning correctly. The positioner should be sending an appropriate output to the actuator when a signal is given. If the valve fails to move while the positioner is provided a signal, verify that the output and supply pressure to the actuator are equal. A positioner should give up to full supply pressure in an attempt to move the valve.



## 3. Stiction

When a valve isn't operating as smoothly as it should, it could be from excess friction due to damage or foreign material in the valve or actuator. The positioner should also be looked at. If the positioner has mechanical feedback, check the feedback mechanism for wear and ensure that any linkage is properly secured.



*As a Masoneilan Authorized Repair Center, Pioneer utilizes the Valscope Pro to perform diagnostics in an effort to identify these and other issues that can be costly in terms of lost production, parts, downtime, and man hours. Diagnostic tests are ran on every new and repaired valve. These tests can be easily done in the field or shop. In closing, the easiest way to troubleshoot control valves is to give the team at Pioneer a call.*



UNMATCHED QUALITY. TAILORED SOLUTIONS.

(314) 771-0700 | info@pioneerindustrial.com | 400 Russell Blvd. | St. Louis, MO 63104