

Your Company Name / Logo	CONTROL VALVE POSITIONER CALIBRATION SOP	Doc no: SOP INST 012	Rev: 0
Department: Instrumentation	Standard operating procedure	Date:	Page: see footer

1. Purpose

To make the valve position follow the control signal accurately and smoothly over its full travel.

2. Scope

Digital (HART or fieldbus) and pneumatic positioners on linear and rotary control valves.

3. References

- Positioner and valve manuals
- Control valve data sheet (fail action, travel, characteristic)
- Loop diagram

4. Responsibilities

- Instrument technician: carries out the work and records results.
- Instrument engineer or supervisor: reviews and approves the records.
- Operations: grants the permit, isolates the process and returns the equipment to service.

5. Safety precautions

- Work only under a valid permit to work and follow the site isolation (lockout tagout) procedure.
- Wear the PPE required for the area: safety helmet, glasses, gloves and safety shoes as a minimum.
- In hazardous areas use certified or intrinsically safe test equipment, or obtain a gas free certificate and hot work permit.
- Inform the control room before starting, and before returning the instrument to service.
- The valve will move during calibration: agree with operations, and isolate or bypass the process if needed.
- Keep hands clear of the yoke, stem and linkage while air is applied.

6. Tools and equipment

- mA source or calibrator
- HART communicator or configuration software
- Supply pressure gauge
- Tools to adjust linkage and feedback arm

7. Prerequisites

- Valve isolated or loop in manual with operations approval.
- Air supply clean, dry and at the specified pressure.

8. Procedure

8.1 Mechanical checks

- 8.1.1 Check feedback arm or magnet is tight and correctly positioned at 50 % travel.
- 8.1.2 Check the actuator for leaks and the stem for damage; correct packing tightness.

8.2 Calibrate

- 8.2.1 Run the positioner autocalibration (travel calibration) as described in the manual.
- 8.2.2 For manual types, set zero at 4 mA and span at 20 mA and repeat until both hold.

8.3 5 point stroke test

- 8.3.1 Apply 4, 8, 12, 16 and 20 mA rising and falling.
- 8.3.2 Record actual travel from the scale or feedback and the time to settle.

8.3.3 Check fail action by removing air or signal as allowed.

8.4 Tune and finish

8.4.1 Use autotune or adjust gain to give a fast response without overshoot.

8.4.2 Save a valve signature if the positioner supports it.

8.4.3 Return the loop to automatic with operations.

9. Acceptance criteria

- Travel error within tolerance at each point (for example $\pm 1\%$ of travel).
- No hunting or overshoot; correct fail action.
- Records and signature saved.

10. Records

- Control valve calibration report (free template: instrumentationblog.in/downloads/templates/control-valve-calibration-report/)
- HART configuration record (free template: instrumentationblog.in/downloads/templates/hart-transmitter-configuration-record/)

11. Approval

	Prepared by	Reviewed by	Approved by
Name			
Signature			
Date			

This procedure is a generic template. Adapt it to your site permit system, the manufacturer instructions and your quality system before use.