



ANSI VALVE LEAKAGE STANDARDS

Control Valve Seat Leakage Classifications - ANSI FCI 70-2 superseding ANSI B16.104

Leakage Class Designation	Maximum Leakage Allowable	Test Medium	Test Pressure	Testing Procedures Required for Establishing Rating
Class I	XXX	XXX	XXX	No test required provided user and supplier so agree
Class II	0.5% of rated capacity	Air or water at 50-125 F (10-52C)	45-60 psig or max. operating differential whichever is lower	Pressure applied to valve inlet with outlet open to atmosphere or connected to a low head loss measuring device full normal closing thrust provided by actuator.
Class III	0.1% of rated capacity	Air or water at 50-125 F (10-52C)	45-60 psig or max. operating differential whichever is lower	Pressure applied to valve inlet with outlet open to atmosphere or connected to a low head loss measuring device full normal closing thrust provided by actuator.
Class IV	0.01% of rated capacity	Air or water at 50-125 F (10-52C)	45-60 psig or max. operating differential whichever is lower	Pressure applied to valve inlet with outlet open to atmosphere or connected to a low head loss measuring device full normal closing thrust provided by actuator.
Class V	0.0005 ml per minute of water per inch of port diameter per psi differential	Water at 50-125F (10-52C)	Max service pressure drop across valve plug, not to exceed ANSI body rating.	Pressure applied to valve inlet after filling entire body cavity and connected piping with water and stroking valve plug closed. Use net specified max actuator thrust, but no more, even if available during test. Allow time for leakage flow to stabilize.
Class VI	Not to exceed amounts shown in following table based on port diameter.	Air or nitrogen at 50-125 F (10-52C)	50 psig or max rated differential pressure across valve plug whichever is lower.	Actuator should be adjusted to operating conditions specified with full normal closing thrust applied to valve plug seat. Allow time for leakage flow to stabilize and use suitable measuring device.

Control Valve Seat Leakage Class VI

NOMINAL PORT DIAMETER (Inches)	NOMINAL PORT DIAMETER (Millimeters)	LEAK RATE (ml per Minute)	LEAK RATE (Bubbles / minute*)
3	76	0.9	6
4	102	1.7	11
6	152	4	27
8	203	6.75	45
10	254	9	63
12	305	11.5	81

*Bubbles per minute as tabulated are a suggested alternative based on a suitable calibrated measuring device, in this case a 0.25-inch OD X 0.032-inch wall tube submerged in water to a depth of from 1/8 to 1/4 inch. The tube end shall be cut square and smooth with no chamfers or burrs. The tube axis shall be perpendicular to the surface of the water. Other measuring devices may be constructed and the number of bubbles per minute may differ from those shown as long as they correctly indicate the flow in milliliters per minute.

There are six different seat leakage classifications as defined by ANSI FCI 70-2. The most commonly used by Gemco Valve are **CLASS I, CLASS IV and CLASS VI.**

CLASS I

Known as dust tight and can refer to metal or resilient seated valves.

CLASS IV

Known as metal to metal. It is the kind of leakage rate you can expect from a valve with a metal shut-off disc and metal seat.

CLASS VI

Known as a soft seat classification. Soft Seat Valves are those where the seat or shut-off disc or both are made from some kind of resilient material such as Teflon®.