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# ANSI VALVE LEAKAGE STANDARDS

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 is also known as dust tight and can refer to metal or resilient seated valves.

CLASS IV is also 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 is 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.

**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 |
|---|---|---|---|---|
| I | XXX | XXX | XXX | No test required provided user and supplier so agree |
| II | 0.5% of rated capacity | Air or water at 50-125° F (10-52° C) | 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. |
| III | 0.1% of rated capacity | Air or water at 50-125° F (10-52° C) | 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. |
| IV | 0.01% of rated capacity | Air or water at 50-125° F (10-52° C) | 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. |
| V | 0.0005 ml per minute of water per inch of port diameter per psi differential | Water at 50-125° F (10-52° C) | 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. |
| VI | Not to exceed amounts shown in following table based on port diameter. | Air or nitrogen at 50-125° F (10-52° C) | 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 Classifications**

| 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.