

Section 10. CLIMATIC TESTS

Climatic Tests for electronic valves are Qualification Approval tests only, unless otherwise stated in the Test Specification.

10.1. Test Chamber. The chamber conditions in any region where valves may be placed shall be varied cyclically between $35 \pm 2^{\circ}\text{C}$ and $20 \pm 5^{\circ}\text{C}$.

The upper temperature shall be maintained for 12 hours and the lower for a minimum of 5 hours each cycle.

The relative humidity in the chamber shall be not less than 95% at any stage of the test.

The atmosphere in the chamber shall not saturate during the 35°C period.

Saturation of the atmosphere shall take place during the cooling period and throughout the 20°C period.

10.2. Test Procedure. Valves shall be introduced into the chamber at Normal Atmospheric Conditions for test, i.e. Temperature 15°C to 35°C ; Air Pressure 600 mm to 800 mm of mercury. The conditions within the chamber shall then be brought to 35°C .

One complete cycle shall be of 24 hours duration and shall consist of 12 hours at 35°C and at least 5 hours at 20°C .

These conditions will be maintained for a period of 42 days after which the valves will be removed from the chamber, have surface moisture removed and will be subjected to the following tests under Normal Atmospheric Conditions.

10.3. Tests

10.3.1. Corrosion. The valve pins and any other external metal parts shall not show corrosion such as would cause unsatisfactory operation of the valve.

10.3.2. Metal Coating. Any metal coating on the valve shall comply with Clauses 5.7.1. and 5.7.2. of this specification.

10.3.3. Insulation Resistance.

- (a) Valves with Glass bases shall comply with Clause 5.2.1. or 5.2.2. of this specification. This test will be completed after one hour recovery under Normal Atmospheric Conditions.
- (b) Valves other than those with glass bases shall have an insulation resistance not less than 1/10 of the value stated in Clauses 5.2.1., 5.2.2., 5.A.3.1. or the relevant Test Specification.

This test will be carried out after two hours recovery under Normal Atmospheric Conditions.

10.3.4. Electrical Characteristics. Electrical characteristics other than those detailed in Clauses 10.3.1., 10.3.2. and 10.3.3. shall not show any significant deterioration.

10.3.5 Torque and Pull Tests on Bases, Caps and Wafer Inserts. Valves fitted with cemented bases, caps, etc., shall comply with the requirements of Section 12 of this specification.

10.4 Low Temperature (Operating)

The temperature of the valve shall be reduced to a specified temperature ($-40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ or $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$), measured at the mounting flange or other specified point. The valve shall be maintained at this temperature for a specified period before any voltages are applied. The Test Specification will specify the duration of the test after switching on.

10.5 High Temperature (Operating)

The temperature of the valve shall be elevated to a specified temperature ($100^{\circ}\text{C} \pm 5^{\circ}\text{C}$ or $150^{\circ} \pm 5^{\circ}\text{C}$), measured at the mounting flange or other specified point. The valve shall be maintained at this temperature for a specified period before any voltages are applied. The Test Specification will specify the duration of the test after switching on. During the test the temperature shall not fall below that specified.

10.6. Temperature Cycling

The valve shall be subjected to ten cycles of temperature variation over the range $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ to $+85^{\circ}\text{C}, \pm 5^{\circ}\text{C}$, measured at the mounting flange or other specified point. The time taken in changing from one temperature extreme to the other shall not be less than one hour and the extremes of temperature shall be maintained for a minimum period of five minutes. The test may commence at any point in the cycle.

10.7 Moisture Resistance (Humidity Test)

The valve non-operating shall be subjected to the cycle shown in Fig.10.1. The duration of the test shall be ten continuous cycles.

10.8. Air Pressure Tests

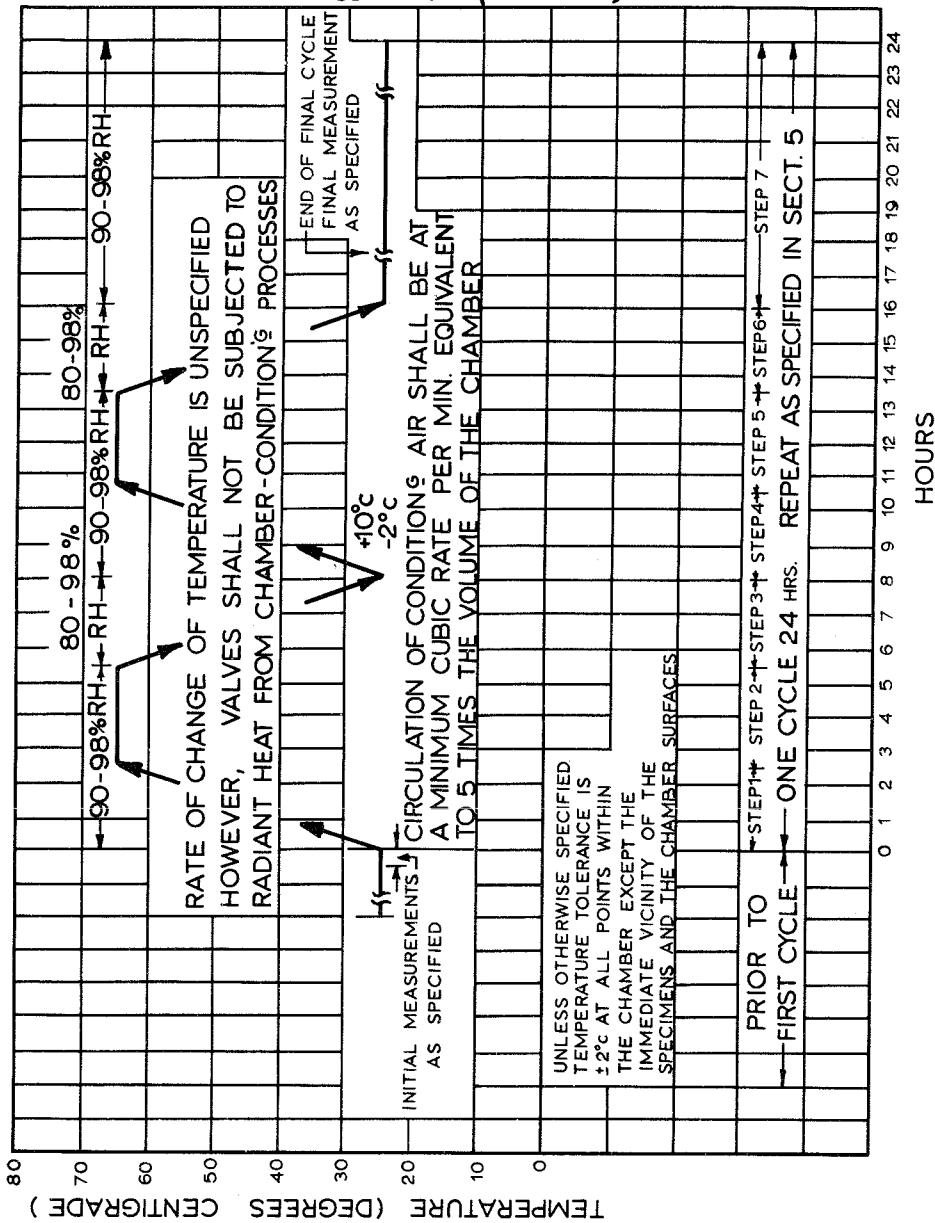
10.8.1. Low Pressure

The valve shall be operated under the specified conditions in a chamber at normal room temperature. The pressure shall then be reduced to the specified value in a time not greater than three minutes, and then further reduced as specified and maintained at this pressure for a period of not less than five minutes.

10.8.2. High Pressure

A pressure of not less than 45 lbs. per sq. inch shall be applied to the valve and/or waveguide for not less than five minutes. The leakage rate shall be specified.

Section 10 (Continued)



GRAPHICAL REPRESENTATION OF HUMIDITY TEST.

Fig. 10.1