AS 2362.15—1990

Australian Standard®

Automatic fire detection and alarm systems—Methods of test for actuating devices

Method 15: Vibration test

1 SCOPE. This Standard sets out the method for evaluating the operation of an actuating device after being subjected to vibration. (See performance requirements in the appropriate device Standard.)

2 PRINCIPLE. The actuating device is subjected to a range of sinusoidal vibrations at specified frequencies and monitored for alarm or fault state.

3 APPARATUS. The apparatus shall be a suitable, sinusoidal vibration machine capable of a total displacement (amplitude) of 3.2 mm peak to peak at 5 Hz and a peak acceleration of 5.5 m/s^2 at 60 Hz and capable of being infinitely variable in frequency between 5 Hz and 60 Hz.

4 PROCEDURE. The procedure shall be as follows:

(a) Attach the actuating device, in its normal orientation, to a suitable vibration table using the fittings provided by the manufacturer (screws, etc), and connect the leads to a power supply and monitoring equipment.

(b) Energize the actuating device and subject it to continuous vibration from 5 Hz through to 60 Hz, increasing the frequency of vibration at a rate of two octaves per hour, and controlling the peak acceleration (a_v) to satisfy the following relationship.

The peak value of vibration acceleration (a_v) is calculated from the equation:

$$a_v = 0.7\sqrt{f}, m/s^2$$

where

f = vibration frequency (Hz).

NOTE: Vibration acceleration in gravity units is calculated from the expression—

$G_v = a_v/g$ Gravity units

(g = acceleration due to gravity (9.81 m/s^2))

Peak displacement is calculated from the equation—

$D_v = a_v/(2\pi f)^2$, in metres

D_v comes from $a = \dfrac{d^2 D}{d t^2}$

where

$$D = D_v \sin(2\pi f)t$$

(c) If resonance points are observed, the actuating device shall be further vibrated at each resonant frequency for a period of 1 h.

5 REPORTING OF RESULTS. The following shall be reported:

(a) Information identifying the actuating device.

(b) Whether the actuating device generated a fault signal or entered an alarm state during the test.

(c) Reference to this test method.