Avery Weigh-Tronix

IP RATINGS

Water and dust ingress ratings explained.

Frequently Asked Questions

1. What is the IP Rating System?

The Ingress Protection (IP) rating system is an internationally recognized scale that relates to proven protection against environmental factors such as liquids and solids.

Ingress protection ratings can be identified by the letters IP, followed by two numbers. These numbers define the amount of protection a digital scale has against specified elements and its ability to resist foreign matter that could otherwise get inside the product and cause it to fail.

The first number refers to the amount of protection a scale or indicator enclosure has against solid matter (such as dust particles), while the second number defines the level of protection against liquids. The larger each digit is, the greater the protection.

IP RATINGS SCALE

First number - Protection against solids

0	No protection.
1	Protected against solid objects greater than 50 mm.
2	Protected against solid objects greater than 12 mm diameter.
3	Protected against solid objects greater than 2.5mm diameter.
4	Protected against solid objects greater than 1.0mm diameter.
5	Dust protected.
6	Dust tight. No Ingress of dust.

Second number - Protection against liquids

0	No protection.
1	Protected against vertically dripping water.
2	Protected against dripping water when tilted up to 15°.
3	Protected against spraying water at an angle of up to 60° from vertical.
4	Protected against splashing water when the enclosure is tilted at any angle up to 15°.
5	Protected against water jets from any direction.
6	Protected against heavy seas or powerful jets of water.
7	Protected against the effects of short term immersion (under defined conditions of pressure and time).
8	Protected against submersion (under conditions specified by the manufacturer).
9K	Protected against close-range high pressure, high temperature spray downs.

2. What is IP69K?

The IP69K rating provides protection against ingress of dust and high temperature, high pressure water – making products with this certification ideal for use in conditions where equipment must be carefully sanitized.

In industries such as food processing, where hygiene and cleanliness is paramount, equipment must be able to withstand rigorous high pressure, high temperature wash-down procedures.

In many industries, where dust and dirt can be an issue, it is important to ensure that dust cannot penetrate the casing of a product and cause it to fail.

The IP69K rating is the highest protection available.

3. What are the advantages of IP69K?

In environments that require heavy washdown, such as in the food processing industry, the combination of water, chemicals, high pressures and temperatures can prove fatal for electronic circuits and instrumentation. The IP69K rating offers complete assurance that the piece of equipment that has undergone that tests is both durable and resistant and conforms to the highest protection rating on the scale.

4. How does a product achieve the IP69K rating?

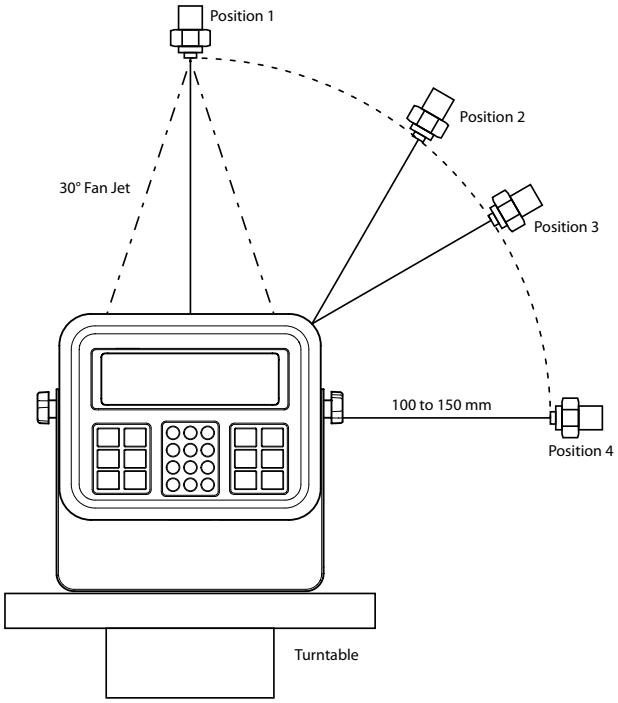
Products bearing the IP69K rating undergo a challenging set of tests to ensure that they offer protection against penetration of high pressure, high temperature water and dust particles.

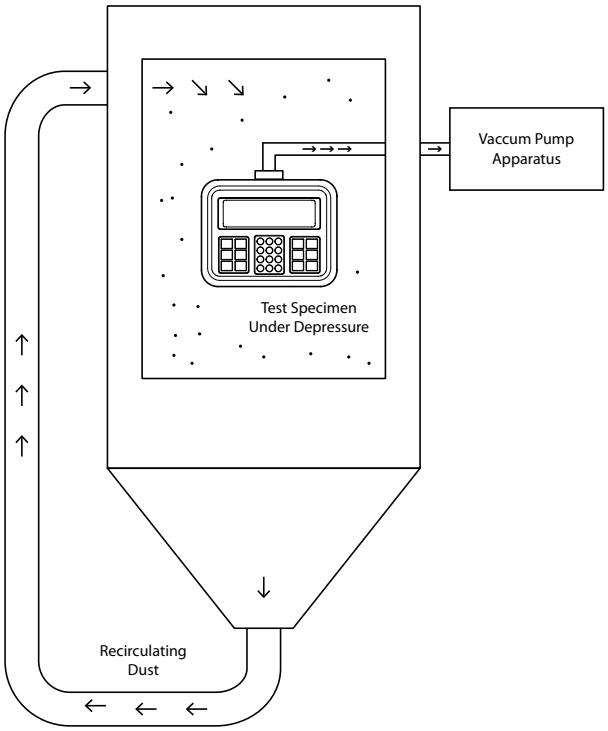
5. How is the water intrusion test performed?

The water intrusion tests themselves are done by placing the product on a turntable with a rotational speed of 5 ±1 revolutions per minute. The product is then sprayed at close range at a rate of approximately 4 gallons/16 liters per minute with water pressure of between 1160-1450 psi, at a temperature of 176°F/80°C. The nozzle from which the water is sprayed is held between 4 and 6 inches from the product, at a variety of angles. Following this rigorous testing procedure, the product is deemed as having successfully achieved the rating if it completely resists water ingress.

6. How is the dust intrusion test performed?

Dust intrusion testing is equally demanding. A test unit is placed into a sealed chamber, inside which the pressure is maintained below the surrounding atmospheric pressure by use of a vacuum pump. This test is performed with a maximum depressure of 20 mbar inside the item under test, and with a maximum extraction rate of 60 volumes/hour. For the duration of the test, the chamber is filled with circulating fine dust such as talcum powder. The object of the test is to attempt to draw the dust particles into the test unit within a defined period of time. The protection is deemed to be satisfactory if the unit has completely resisted dust ingress at the end of the test.





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