Type 4X Hosedown

- **UL508A / CSA 22.2 NO 14** Industrial Control Panels
- **NEMA 250** Standard for Enclosures for Electrical Equipment (1000 Volts Maximum)
- **UL50 / CSA C22.2 NO 94.1** Enclosures for Electrical Equipment, Non-Environmental Considerations
- **UL50E / CSA C22.2 NO 94.2** Enclosures for Electrical Equipment, Environmental Considerations
- **Type 4X** Enclosures constructed …protection … against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); that provides an additional level of protection against corrosion; and that will be undamaged by the external formation of ice on the enclosure.

Test Description

- 10 -12 ft. away at 65 gal./min.
- Directed at all seams at rate of 6mm/sec.
- Pass result criteria: no water entry

Required certification Type 4X traditional minimum washdown

IPX6 Hosedown

IEC60529: 2013 Degrees of protection Provided by Enclosures (IP Code)

- **Test for second characteristic numeral 6**

- **Test description**
  - Internal diameter of the nozzle: **12,5 mm**
  - Delivery rate: **100 l/min ± 5 %**
  - Test duration per square meter of enclosure surface area likely to be sprayed: **1 min.**
  - Minimum test duration: **3 min.**
  - Distance from nozzle to enclosure surface: **between 2,5 m and 3 m**

Acceptance Criteria

In general, if any water has entered, it shall not be sufficient to interfere with the correct operation of the equipment or impair safety

IP66 and IP69(K) – second character references liquid

IP6X Dust

IEC60529: 2013 Degrees of Protection Provided by Enclosures (IP Code)

- **Test for first characteristic numeral 6**

- **Test Description**
  - Dust test talcum powder used shall be able to pass through a square-meshed sieve the smaller than 75 micron
  - is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more
  - 2 kPa (20 mbar), for a period of 8 h

Acceptance Criteria

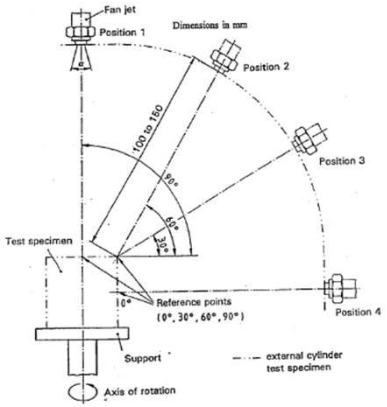
At the end of the test, no dust shall enter

IP66 and IP69(K) – first character references dust

IPX9K Washdown

DIN 40050-9 Road Vehicles; Degrees of Protection (IP-code); Protection Against Foreign Objects; Water and Contact; Electrical Equipment

- **IPX9K high-pressure wash**
- **“K” specifically reference electrical equipment in road vehicles**
- **Test Description:**
  - Spray 14-16 L/Min pressure 1160 to 1450 psig
  - Spray position 100 to 150 mm away- directed at 0, 30, 60, 90 Degrees for 30 seconds each
  - Water Temperature 80C
  - 5 RPM turn table



Original referenced pressure wash standard

IP69

IEC 60529 Edition 2.2 2013 IP69 Degrees of protection provided by enclosures (IP Code)

➢ Test Description:

- Adjustment of the flow – rate between (15 ± 1) l/min to reach a distribution impact force of 0,9 – 1,2 N
- For small enclosures (largest dimension less than 250 mm), use rotation method
- For larger enclosures,1 min test duration per square metre of enclosure surface area likely to be sprayed. Minimum test duration: 3 min
- Distance between nozzle and sample under test shall be 175 ± 25 mm.

IEC 60529 further developed DIN 40050-90 pressure wash

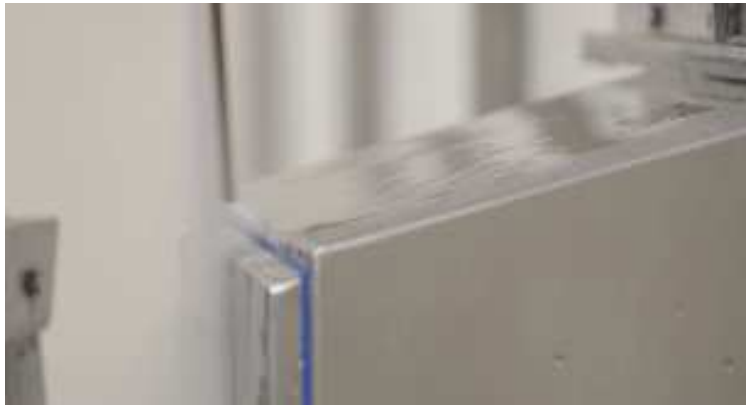
Washdown Comparison

Water Test	Flow Rate Gal/min	Flow Rate L/Min	Nozzle Diameter	Nozzle Sq-in	Velocity Ft/sec	Mass Flow lb/sec	Force on a vertical plate (lbs)
Type 4	65	246	1	0.785	26.5	9	7.45
IPX6	45	100	0.5	0.19	45.5	3.7	5.08
IPX9	3.9	15	0.072	0.0046	272	0.55	0.27

Type 4

IPX6

IPX9



IPX9 has been shown to be the most severe for leaks