

SPRINKLER K-FACTOR TESTER



Sprinkler K-Factor Tester — ToronFT™ SW-KF

ToronFT™ SW-KF Sprinkler K-Factor Tester is a precision hydraulic measurement system engineered for the accurate determination of the flow coefficient (K-factor) of fire sprinkler devices. By applying controlled water pressure and capturing precise flow rate data, the ToronFT™ SW-KF enables manufacturers, testing laboratories, and certification bodies to verify that sprinkler K-factors conform to the performance requirements of international fire protection standards.

The sprinkler flow coefficient tester accommodates two distinct test configurations: one set of apparatus is used for sprinklers with a nominal flow coefficient less than or equal to 115, and a separate set is used for sprinklers with a nominal flow coefficient greater than 115 — ensuring that the correct hydraulic range is available for any sprinkler type in production or qualification testing.

APPLICATIONS

Sprinkler K-Factor Tester — ToronFT™ SW-KF Applications

- Fire sprinkler manufacturers: production-line K-factor verification and quality control
- Third-party and accredited testing laboratories: K-factor determination for product listing and certification
- Fire protection engineering: performance data generation for hydraulic system design
- Standards compliance auditing: verification of sprinkler flow characteristics per international requirements
- Research and development: evaluation of new orifice configurations and deflector geometries



FEATURES

Sprinkler K-Factor Tester — ToronFT™ SW-KF Key Features

- Dual apparatus configuration: separate test sets for K-factor ≤ 115 and K-factor > 115 — covering the full range of commercial sprinkler types
- Test medium: water — directly replicating in-service hydraulic conditions
- Pressure control range: 0.05 MPa – 1.00 MPa for comprehensive K-factor evaluation
- Hydraulic sensor pressure measurement with accuracy greater than 0.4 level for reliable data capture
- Vortex flowmeter with a flow range of 0–300 L/min — accurate, non-intrusive volumetric measurement
- Stable, automated pressure delivery minimizes operator variability between test runs
- Compact, self-contained system design for efficient laboratory integration
- Data output suitable for direct use in certification and listing documentation

THEORY & METHOD

Theory and Method

The K-factor of a sprinkler is a hydraulic constant that relates flow rate to pressure according to the relationship $Q = K\sqrt{P}$, where Q is the flow rate and P is the inlet pressure. Accurate K-factor determination requires both a precise, stable water pressure source and a calibrated flow measurement system.

The ToronFT™ SW-KF delivers water to the test sprinkler at controlled pressures between 0.05 MPa and 1.00 MPa, using a hydraulic sensor to monitor inlet pressure with an accuracy exceeding 0.4 level. Flow is measured using a vortex flowmeter, which provides reliable, repeatable volumetric measurement across the 0–300 L/min operating range. By recording simultaneous pressure and flow data at multiple test points, the instrument calculates the sprinkler K-factor with high

accuracy and generates the documentation required for listing and certification submissions.

TECHNICAL SPECIFICATIONS

Sprinkler K-Factor Tester — ToronFT™ SW-KF Technical Specifications

Parameter	Specification
Model	ToronFT™ SW-KF
Test Medium	Water
Test Pressure Range	0.05 MPa – 1.00 MPa
Pressure Measurement Method	Hydraulic sensor
Pressure Measurement Accuracy	Greater than 0.4 level
Flow Measurement Method	Vortex flowmeter
Flow Range	0 – 300 L/min
Test Configurations	Two sets: $K \leq 115$ and $K > 115$



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