



FIRE NOZZLE SPRAY AND FLOW TESTER

Fire Nozzle Spray and Flow Tester - ToronFT™ FN-SPT

ToronFT™ FN-SPT is a Fire Nozzle Spray and Flow Tester designed to measure the spray range, flow rate, spray angle, and bloom angle of fire nozzles under defined operating conditions. These four performance parameters collectively define the hydraulic effectiveness of a fire nozzle — determining how far the water stream reaches, how much water is delivered, and the angular pattern of the spray — and are fundamental quality indicators for fire suppression effectiveness in both structural and outdoor firefighting applications.

The ToronFT™ FN-SPT combines a fire nozzle spray tester, flow measurement equipment, and a spray angle and bloom angle measurement system in a single integrated test platform. The dynamic hydraulic pressure source for the apparatus is the ToronFT™ LHD Large Flow Dynamic Hydraulic Strength tester (sold separately), which provides the high-flow water supply at the rated nozzle pressure required for spray performance testing. The instrument is suitable for both outdoor fire nozzle spray range tests and flow, spray angle, and bloom angle measurement.

APPLICATIONS

Fire Nozzle Spray and Flow Tester - ToronFT™ FN-SPT Applications

- Fire nozzle spray range testing: measurement of maximum spray throw distance under rated pressure and controlled wind conditions for fire suppression effectiveness evaluation
- Fire nozzle flow rate measurement: volumetric flow verification at rated operating pressure for flow rate specification compliance testing
- Spray angle characterization: measurement of the included angle of the spray cone in the spray position for pattern width compliance verification
- Bloom angle characterization: measurement of the full spray pattern angle in the fully open (bloom/fog) nozzle position

- Fire nozzle type approval certification: spray range, flow, and angle testing as required elements of NFPA 1964 and EN 15182 fire nozzle qualification programs
- Production quality control: spray performance verification of fire nozzle production batches before shipment
- Fire nozzle design development: spray characteristic mapping for new fire nozzle geometries, orifice designs, and flow restriction configurations



FEATURES

Fire Nozzle Spray and Flow Tester - ToronFT™ FN-SPT Key Features

1. Four-Parameter Spray Performance Testing

The ToronFT™ FN-SPT measures all four primary fire nozzle spray performance parameters — spray range, flow rate, spray angle, and bloom angle — in a single integrated tester, eliminating the need for separate instruments for each measurement parameter.

2. Standardized Jet Elevation Angle — $30^\circ \pm 2^\circ$

The fire nozzle spray tester is configured to hold the nozzle at a jet elevation angle of $30^\circ \pm 2^\circ$ — the standard elevation specified by applicable fire nozzle test standards for spray range measurement — ensuring test results are directly comparable to values reported by other laboratories using the same standard conditions.

3. Defined Height Reference — 10.05 m Nozzle Mouth Height

The height from the center of the spray nozzle mouth to the ground is 10.05 m, providing the defined elevation reference required by applicable fire nozzle spray range test standards for reproducible, comparable range measurement.

4. Integrated Anemometer for Wind Speed Control

The apparatus is equipped with an anemometer to measure outdoor ambient wind speed. Spray range tests are only conducted when wind speed is less than 2 m/s, and testing is performed in the downwind direction — ensuring that wind effects do not invalidate the spray range measurement.

5. Integrated Flow Measurement Equipment

Flow measurement equipment is integrated into the apparatus to record volumetric flow rate through the nozzle at rated pressure conditions, providing simultaneous flow and spray performance data in a single test session.

6. Dedicated Spray and Bloom Angle Measurement System

Spray angle and bloom angle measurement equipment is included as part of the integrated tester, enabling angular pattern characterization of the fire nozzle discharge in both the spray and fully open (bloom) operating positions.

THEORY & METHOD

Theory and Method

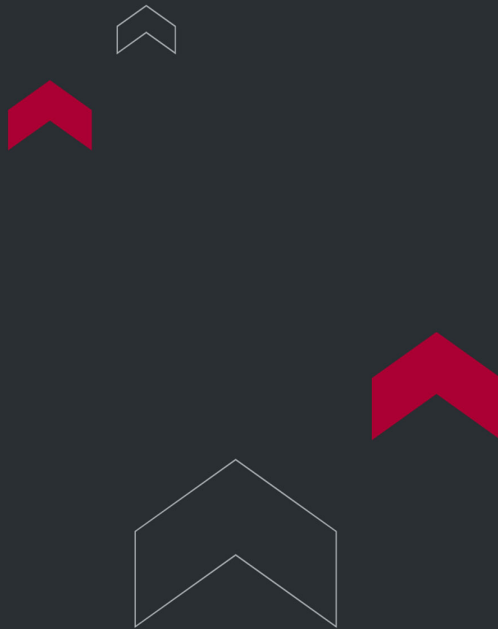
The ToronFT™ FN-SPT measures fire nozzle spray performance by operating the nozzle at its rated flow and pressure conditions and recording the resulting spray characteristics. For spray range testing, the fire nozzle is oriented at a jet elevation angle of $30^\circ \pm 2^\circ$ — the standard angle specified by applicable fire nozzle performance standards for maximum-range assessment. The height from the center of the spray nozzle mouth to the ground is 10.05 m, providing the standard elevation reference for outdoor spray range measurement.

An anemometer is integrated to measure outdoor wind speed — spray range tests are only conducted when ambient wind speed is less than 2 m/s, and tests are performed in the downwind direction to provide a consistent, reproducible test condition for range measurement. For flow measurement, calibrated flow measurement equipment integrated into the tester records the volumetric flow rate through the nozzle at the rated pressure condition. Spray angle and bloom angle are measured using dedicated angle measurement equipment that captures the angular geometry of the nozzle discharge pattern in both the jet (spray) and fully open (bloom) configurations

TECHNICAL SPECIFICATIONS

Fire Nozzle Spray and Flow Tester - ToronFT™ FN-SPT Technical Specifications

Parameter	Specification
Model	ToronFT™ FN-SPT
Application	Fire nozzle spray range, flow rate, spray angle, and bloom angle testing
Test Parameters	Spray range; flow rate; spray angle; bloom angle
Jet Elevation Angle	30° ± 2°
Nozzle Mouth Height from Ground	10.05 m
Wind Speed Limit for Testing	<2 m/s (anemometer included; testing in downwind direction)
Pressure Source	ToronFT™ LHD Large Flow Dynamic Hydraulic Strength tester (sold separately)
Included Equipment	Fire nozzle spray tester; flow measurement equipment; spray & bloom angle measurement equipment



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