



SAFETY RELIEF DEVICE ACTION TESTER

Safety Relief Device Action Tester — ToronFT™ SRD

ToronFT™ SRD Safety Relief Device Action Tester is a precision hydraulic testing instrument designed for the action pressure qualification of safety relief devices (pressure relief valves and safety valves) used in gas fire extinguishing systems. By slowly increasing water pressure in the test specimen until the safety relief device operates and recording the exact actuation pressure, the ToronFT™ SRD enables manufacturers and testing laboratories to verify that safety relief devices actuate within the required pressure ranges specified by international gas fire suppression standards.

The safety relief device action tester is designed to be used in conjunction with the ToronFT™ HSC Hydraulic Strength Comprehensive tester, which provides the high-pressure hydraulic supply required for testing safety relief devices rated across the full pressure range of gas fire extinguishing system components.

APPLICATIONS

Safety Relief Device Action Tester — ToronFT™ SRD Applications

- Gas fire extinguishing system manufacturers: action pressure qualification of safety relief devices on fire extinguishing agent bottle groups, drive gas bottle groups, and combined distribution system header pipes
- Third-party certification and listing laboratories: safety relief device action pressure testing per ISO 14520 and related international standards
- Quality assurance departments: production-line and incoming inspection action pressure verification for safety relief devices
- R&D departments: evaluation of new safety relief valve designs and setpoint configurations
- System assembly and commissioning: verification of safety relief device setpoints before system installation



FEATURES

Safety Relief Device Action Tester — ToronFT™ SRD Key Features

- Verifies safety relief device action pressure across all three installation positions: fire extinguishing agent bottle group, drive gas bottle group, and combined distribution system header pipe
- Pressure gauge with needle stopping mechanism and instantaneous recording function — captures the exact actuation pressure without pressure decay
- Action pressure specification 1 — fire extinguishing agent bottle group: $19 \text{ MPa} \pm 0.95 \text{ MPa}$
- Action pressure specification 2 — drive gas bottle group: $\geq 1.25 \times$ max working pressure; $\leq 95\%$ of strength test pressure; within $(1 \pm 5\%)$ of set value
- Action pressure specification 3 — combined distribution system header pipe: $15 \text{ MPa} \pm 0.75 \text{ MPa}$
- Controlled pressure increase rate: $\leq 0.5 \text{ MPa/s}$ — preventing shock actuation during pressurization
- Designed for use in conjunction with the ToronFT™ HSC Hydraulic Strength Comprehensive tester as the hydraulic pressure source
- Air purging procedure prior to test ensures accurate, gas-free hydraulic measurement

THEORY & METHOD

Theory and Method

Safety relief device action pressure testing verifies that the relief device actuates at the correct pressure for each installation location within the gas fire extinguishing system. The test connects the inlet of the test sample to the test device, and after removing air from the connecting pipeline and the inner cavity of the sample and sealing all outlets, the pressure is slowly increased at a rate of no more than 0.5 MPa/s until the safety pressure relief device operates. The pressure at the moment of

operation is recorded by the pressure gauge equipped with a needle stopping mechanism and instantaneous recording function.

Three distinct action pressure specifications are verified using the ToronFT™ SRD: (1) safety relief devices on fire extinguishing agent bottle groups must actuate at $19 \text{ MPa} \pm 0.95 \text{ MPa}$; (2) safety relief devices on drive gas bottle groups must actuate at a pressure no less than 1.25 times the maximum working pressure of the bottle set, but not exceeding 95% of its strength test pressure, within a relief action pressure range of $(1 \pm 5\%)$ of the set value; (3) safety relief devices on combined distribution system header pipes must actuate at $15 \text{ MPa} \pm 0.75 \text{ MPa}$.

TECHNICAL SPECIFICATIONS

Safety Relief Device Action Tester — ToronFT™ SRD Technical Specifications

Parameter	Specification
Model	ToronFT™ SRD
Test Type	Safety relief device action pressure test
Pressure Increase Rate	$\leq 0.5 \text{ MPa/s}$
Pressure Gauge	Needle stopping mechanism with instantaneous recording function
Action Pressure — Extinguishing Agent Bottle	$19 \text{ MPa} \pm 0.95 \text{ MPa}$
Action Pressure — Drive Gas Bottle	$\geq 1.25 \times \text{max working pressure}$; $\leq 95\% \text{ strength test pressure}$; within $(1 \pm 5\%)$ of set value
Action Pressure — Distribution System Header	$15 \text{ MPa} \pm 0.75 \text{ MPa}$
Required Hydraulic Source	ToronFT™ HSC (used in conjunction)



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