FINAL DRAFT
International Standard

ISO/FDIS 6182-2

Fire protection — Automatic sprinkler systems —

Part 2: Requirements and test methods for sprinkler system alarm valves, check valves, water motor alarms, retard devices and accelerators

Protection contre l'incendie — Systèmes d'extinction automatiques du type sprinkler —
Partie 2: Exigences et méthodes d'essai des soupapes d'alarme hydrauliques, des limiteurs de surpression et des dispositifs d'alarme à moteur hydraulique

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 5, *Fixed firefighting systems using water.*

This fourth edition cancels and replaces the third edition (ISO 6182-2:2012), as well as ISO 6182-3:2012, ISO 6182-4:2019, ISO 6182-5:2012, ISO 6182-6:2020 and ISO 6182-8:2019.

The main changes are as follows:

— Consolidation of ISO 6182-2:2012, ISO 6182-3:2012, ISO 6182-4:2019, ISO 6182-5:2012, ISO 6182-6:2020, and ISO 6182-8:2019, into this document.

Inclusion of requirements for additional preaction valve variations.

A list of all parts in the ISO 6182 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fire protection — Automatic sprinkler systems —

Part 2: Requirements and test methods for sprinkler system alarm valves, check valves, water motor alarms, retard devices and accelerators

1 Scope

This document specifies performance, requirements, methods of test and marking requirements for the following equipment for use in automatic fire protection systems:

— wet alarm valves;

— retard devices;

— water motor alarms;

— dry pipe valves;

— accelerators;

— deluge valves;

— preaction valves;

— check valves.

Performance and test requirements for trim valves for alarm valves are not covered by this document.

The requirements for pressure reducing valves and fire pump relief valves are provided by ISO 6182-16 and ISO 6182-17.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

ISO 898-2, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2: Nuts with specified property classes*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
accelerator
device which hastens the operation of a dry pipe valve using mechanical means other than by reducing installation pipework pressure

Note 1 to entry: For the purposes of this document, the term accelerator refers to an accelerator and any (internal or external) antiflooding device.

Note 2 to entry: See also 3.3.

3.2
alarm device
mechanical or electrical device which sounds an alarm upon operation of the valve

3.3
antiflooding device
device intended to prohibit excessive water or other foreign matter from entering any relevant part or parts of the accelerator where this can potentially prevent subsequent operation.

3.4
anti-reseating latch
component that prevents the sealing assembly from returning to its closed position after operation

3.5
automatic drain
device which is normally open and which automatically drains water from and vents the intermediate chamber of a valve to the atmosphere when the valve is in the ready position, and which limits water flow from the chamber after the valve has tripped

3.7
check valve
valve that permits flow into a pipe system and that prevents reverse flow

3.8
clapper
type of sealing assembly which includes rotational movement

Note 1 to entry: See also 3.29.

3.9
clapper-type valve
type of valve utilizing a clapper as the main sealing element which prevents flow from the system to the supply side of the valve

3.10
compensator
external or internal device such as an auxiliary valve that minimizes false alarms caused by a small increase of service pressure

3.11
corrosion-resistant material
bronze, brass or nickel-copper alloys such as UNS N04400, austenitic stainless steel, or equivalent metallic or plastic material conforming with the requirements of this document

3.12
deluge system
automatic fire protection system using a deluge valve which is operated by an auxiliary means to admit water into a system of open sprinklers or nozzles.

3.13
deluge valve
automatic water-supply control valve intended to be operated by an auxiliary means to admit water into a system of open piping for a deluge system, or system of closed piping for a preaction system

Note 1 to entry: The auxiliary means of operating a deluge valve can be mechanical, electrical, hydraulic, pneumatic, thermal, manual or a combination of these.

3.13.1
hydraulically operated deluge valve
deluge valve that is maintained in the set position by service hydraulic pressure acting against a diaphragm or piston that holds the sealing assembly closed.

Note 1 to entry: A change in pressure against the diaphragm or piston allows the valve to open. The pressure is changed by operation of a manual control, an electrical device such as solenoid valve, or hydraulically, thermally, or pneumatically operated device.

3.13.2
pressure-loss operated deluge valve
valve in which the valve is released from the set position by reducing the pressure acting against an auxiliary diaphragm or piston

3.13.3
supply pressure operated deluge valve
a valve that is maintained in the set position by a spring or other means and is hydraulically operated by the application of service pressure to an auxiliary diaphragm or piston

3.14
differential
ratio of service pressure to system air pressure (expressed as gauge pressure) at the trip point

Note 1 to entry: See also 3.36.

3.15
differential type valve
type of valve in which air pressure in the system acts directly or indirectly or both on the sealing assembly to maintain it in the closed position

Note 1 to entry: The air seat of the sealing assembly is of equal or larger diameter than the diameter of the water seat of the sealing assembly, with the two separated by an intermediate chamber maintained at atmospheric pressure.

3.16
dry system
automatic fire sprinkler system in which the piping contains air or nitrogen under pressure, the release of which allows water from a water supply to discharge through the system

3.17
dry pipe valve
valve that controls the flow of water into a dry pipe sprinkler system and incorporates a provision for actuation of an alarm under specified conditions

3.18
holding chamber
chamber pressurized with system air pressure which actuates an accelerator upon a sufficient rate of loss of system air pressure

3.19
intermediate chamber
part of a valve which separates the air and/or water sealing assembly seating surfaces and is at atmospheric pressure when the valve is in the ready (set) condition

3.20
mechanical-type valve
type of valve in which the air pressure in the system acts on the sealing assembly and linking mechanism to maintain it in the closed position

3.21
minimum opening pressure
minimum pressure at which water begins to pass through the valve

3.22
non-interlock preaction system
automatic fire sprinkler system in which water is admitted to the system upon either activation of a supplemental detection system or loss of system pressure in combination with failure of the detection system

3.23
preaction system
automatic fire sprinkler system using a deluge valve that is operated by an auxiliary means to admit water into a system of automatic sprinklers or other automatic spraying devices

3.24
preaction valve
preaction valve or valve combination which holds air in a closed sprinkler system and which is opened by combination of sprinkler release or release system activation or both.

3.24.1
preaction valve Type A – non-interlocked
valve assembly which, under normal operating conditions, opens when either the release system or a sprinkler operates

3.24.2
preaction valve Type B1 – Single-Interlocked with fail safe
valve assembly which, under normal operating conditions, opens only on the activation of a release system

Note 1 to entry: Type B1 valves operate as a dry system if the release system fails.

3.24.3
preaction valve Type B2 – Single-Interlocked without fail safe
valve assembly which, under normal operating conditions, opens only on the activation of a release system

Note 1 to entry: Type B2 valves can only be manually operated if the release system fail.

3.24.4
preaction valve Type C1 – Double-Interlocked with fail safe
valve assembly which, under normal operating conditions, opens when both the release system and a sprinkler have operated

Note 1 to entry: Type C1 valves operate as a dry system if the release system fails.

3.24.5
preaction valve Type C2 – Double-Interlocked without fail safe
valve assembly which, under normal operating conditions, opens when both the release system and a sprinkler have operated.

Note 1 to entry: Type C2 valves will not operate as a dry system and can only be manually operated if the release system fails.

3.25
rated working pressure
maximum service pressure at which a valve or device is intended to operate

3.26
ready (set) condition
state of a valve with the sealing assembly in the closed or set position with service and system pressure applied

3.27
retard chamber
volumetric type of retard device designed to minimize false alarms caused by surges and fluctuations in sprinkler system water supplies

3.28
retard device
pneumatic, hydraulic or electric timer designed to minimize false alarms caused by surges and fluctuations in sprinkler system water supplies

3.29
sealing assembly
main movable sealing element (such as a clapper) of the valve which prevents the reverse flow of water

3.30
sealing assembly seat ring
main fixed sealing element of a valve which prevents the reverse flow of water

3.31
sensitivity
minimum rate of flow from a system outlet which will open the wet alarm valve, as indicated by satisfactory operation of alarms

3.32
service pressure
static water pressure at the inlet to a valve when the valve is in the ready condition

3.33
system pressure
static water pressure at the main outlet of a valve when the valve is in the ready condition

3.34
system air pressure
static air pressure in the system piping when the valve is in the ready condition

3.35
trim
external equipment and pipework, excluding the main installation pipework, fitted to the valve

3.36
trip point
point at which a valve operates, admitting water into the system, measured in terms of the system air pressure at a given service pressure

3.37
water motor alarm
hydraulically actuated device which provides a local audible alarm as a result of a flow through a valve

3.38
wet alarm valve
valve that permits flow of water into a wet sprinkler system, prevents the reverse flow of water and incorporates a provision for actuation of an alarm under specified flow conditions.

3.39
wet pilot line
hydraulic detection and actuation piping system fitted with heat responsive devices, usually automatic sprinklers, which, when subjected to heat from a fire, operate to release pressure from the actuation piping system causing the automatic operation of a deluge valve