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**Components for fire-extinguishing  
systems using gas — Requirements and  
test methods — Container valve  
assemblies and their actuators; selector  
valves and their actuators; nozzles;  
flexible and rigid connectors; and check  
valves and non-return valves**

*Composants pour les systèmes d'extinction d'incendie utilisant  
des agents gazeux — Exigences et méthodes d'essai — Vannes de  
réservoir et leurs dispositifs d'asservissement; vannes de sélection et  
leurs dispositifs d'asservissement; diffuseurs; connecteurs flexibles et  
rigides; et vannes d'arrêt et clapets de retenue*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16003 was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 8, *Gaseous media and firefighting systems using gas*.

## Introduction

This International Standard has been prepared by a specialist working group of ISO/TC 21/SC 8 as a companion document to ISO 14520 (all parts) and is compatible with corresponding documents prepared by CEN. It does not cover all components incorporated in gaseous fire extinguishing systems dealt with in ISO 14520 (all parts); rather, it is restricted to key components only, viz., container valve assemblies, flexible connectors, check valves and non-return valves, selector valves and associated actuators and discharge nozzles.

CO<sub>2</sub> system components are also covered by this International Standard (see ISO 6183).

NOTE The components requirements of this International Standard are also satisfied by the requirements of EN 12094 (all parts).

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# Components for fire-extinguishing systems using gas — Requirements and test methods — Container valve assemblies and their actuators; selector valves and their actuators; nozzles; flexible and rigid connectors; and check valves and non-return valves

## 1 Scope

This International Standard specifies requirements and describes test methods for the following components used in gaseous fire-extinguishing systems: container valve assemblies, which include container valve, actuator and, if applicable, a diaphragm; selector valves and their actuators; agent distribution nozzles; flexible connectors; and check and non-return valves.

Container valve assemblies are designed to control the extinguishant flow from the container to the distribution pipe work. They are normally in the closed position. The automatic control device triggers the actuator and the valve opens. Where applicable, the requirements contained in the test methods also apply to separate container valves.

The design of the nozzles influences the area coverage, the height limitations, the discharge rate and the flow rate.

This International Standard is applicable to check valves installed between container valve and manifold and non-return valves installed in pilot lines, except those valves that are tested in combination with non-electrical control devices. It is required that non-return and check valves allow the passage in the direction of flow and prevent flow in the reverse direction.

**NOTE** For the purpose of this International Standard, the pressure in megapascals (bars) means gauge pressure, unless otherwise indicated.

## 2 Normative references

The following referenced documents are indispensable for the application 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 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 7005 (all parts), *Metallic flanges*

ISO 14520-1:2006, *Gaseous fire-extinguishing systems — Physical properties and system design — Part 1: General requirements*

IEC 60068-2-6, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal)*

IEC 60730-2-14, *Automatic electrical controls for household and similar use — Part 2-14: Particular requirements for electric actuators*

ASTM B117, *Standard Practice for Operating Salt Spray (Fog) Apparatus*

### 3 Terms and definitions

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

#### 3.1

##### **actuator**

component that causes a valve to operate

#### 3.2

##### **check valve**

valve that is installed between container and manifold and that permits flow in only one direction

#### 3.3

##### **container valve**

valve that retains the extinguishing agent in a container, releasing it when actuated

#### 3.4

##### **CO<sub>2</sub> high-pressure installation**

fire-extinguishing installation in which the CO<sub>2</sub> is stored at ambient temperature

NOTE At 21 °C, the vapour pressure of CO<sub>2</sub> is 5,88 MPa (58,8 bar) absolute, or 5,88 MPa (57,8 bar) gauge.

#### 3.5

##### **CO<sub>2</sub> low-pressure installation**

fire-extinguishing installation in which the CO<sub>2</sub> is stored at low temperature, normally –18 °C, at which the nominal pressure is 2,07 MPa (20,7 bar)

#### 3.6

##### **dip tube**

pipe connected to a container valve inlet that allows the discharge of a liquid extinguishing medium out of a vertical container with the valve at the top

#### 3.7

##### **distribution characteristics**

limitations of enclosure dimensions within which a nozzle is approved for use

#### 3.8

##### **fill ratio**

mass of extinguishing medium related to the net capacity of a container

NOTE The fill ratio is expressed in units of kilograms per litre.

#### 3.9

##### **filter**

component to prevent blockage of nozzles or other operating components by foreign materials

#### 3.10

##### **flexible connector**

link between two parts employed to compensate for installation spacing tolerances or to provide allowance for relative movement