
**Gas welding equipment — Safety
devices —**

**Part 1:
Devices incorporating a flame
(flashback) arrestor**

*Matériel de soudage au gaz — Dispositifs de sécurité —
Partie 1: Dispositifs avec arrêt de flamme*

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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 documents 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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 8, *Equipment for gas welding, cutting and allied processes*.

This first edition of ISO 5175-1, together with ISO 5175-2, cancels and replaces ISO 5175:1987, which has been technically revised. It also incorporates the Amendment ISO 5175:1987/Amd 1:2015.

A list of all parts in the ISO 5175 series can be found on the ISO website.

Requests for official interpretations of any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 8 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Gas welding equipment — Safety devices —

Part 1:

Devices incorporating a flame (flashback) arrestor

1 Scope

This document specifies the general requirements and tests for safety devices for fuel gases and oxygen or compressed air incorporating a flame (flashback) arrestor used downstream of manifold, cylinder and/or pipeline outlet regulators, and upstream of blowpipes for welding, cutting and allied processes.

This document does not specify the location of these devices in the gas system.

This document is not applicable to safety devices not incorporating a flame arrestor, covered by ISO 5175-2.

This document does not apply to the use of safety devices incorporating flame arrestors for applications with premixed oxy/fuel or air/fuel gas supply systems, e.g. downstream of gas mixers or a generator to produce hydrogen/oxygen mixture by electrolytic decomposition of water.

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 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 5175-2, *Gas welding equipment — Safety devices — Part 2: Not incorporating a flame (flashback) arrestor*

ISO 7289, *Gas welding equipment — Quick-action couplings with shut-off valves for welding, cutting and allied processes*

ISO 9090, *Gas tightness of equipment for gas welding and allied processes*

ISO 9539, *Gas welding equipment — Materials for equipment used in gas welding, cutting and allied processes*

ISO 10225, *Gas welding equipment — Marking for equipment used for gas welding, cutting and allied processes*

ISO 15296, *Gas welding equipment — Vocabulary*

EN 560, *Gas welding equipment — Hose connections for equipment for welding, cutting and allied processes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15296 and the following apply.

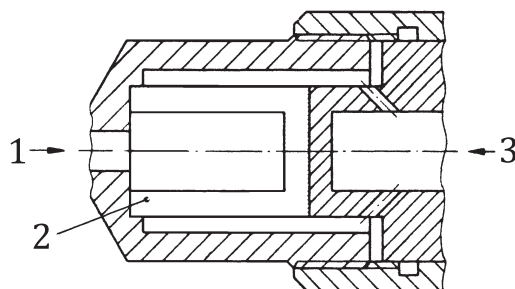
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 flame arrestor

device which arrests a flame front

EXAMPLE The good thermal conductivity, high porosity and small pore size (larger surface) of sintered metal elements lead to flame quenching. An example is given in [Figure 1](#).



Key

- 1 normal direction of gas flow
- 2 e.g. sintered metal element
- 3 flame

Figure 1 — Flame arrestor (example)

3.2 maximum operating pressure

maximum pressure to which the equipment may be subjected in service

3.3 multifunctional safety device

device that incorporates two or more of the safety functions

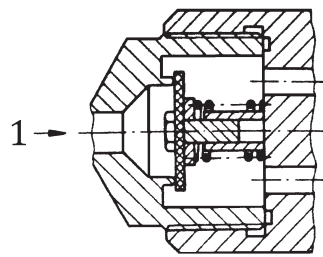
EXAMPLE Flame arrestor ([3.1](#)) with non-return valve ([3.4](#)) and cut-off valve.

Note 1 to entry: The *temperature-sensitive cut-off valve* ([3.6](#)) is normally used in combination with a flame arrestor as its purpose is to cut-off the gas flow before the temperature at the flame arrestor reaches a point where flame transmission across the flame arrestor takes place. It is normal for pressure and or temperature cut-off valves only to be used in combination with flame arrestors. Due to the burning characteristics of hydrogen, it is recommended that all flame arrestors for hydrogen incorporate a temperature-sensitive cut-off valve.

3.4 non-return valve

device that prevents passage of gas in the direction opposite to the intended flow

EXAMPLE Valve is held open by energy in gas stream and closes when downstream pressure is approximately equal to or greater than that in normal direction of flow. An example is given in [Figure 2](#).

**Key**

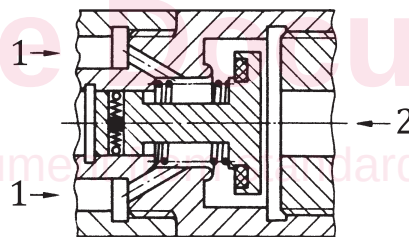
1 normal direction of gas flow

Figure 2 — Non-return valve (example)

3.5**pressure-sensitive cut-off valve**

device that stops the gas flow when the downstream pressure is higher than the upstream pressure by more than a predetermined value

EXAMPLE Valve is held open, e.g. by a spring; it is actuated by a pressure wave from downstream and is then automatically held closed by a special device. An example is given in [Figure 3](#).

**Key**

1 normal direction of gas flow

2 back-pressure wave

Figure 3 — Pressure-sensitive cut-off valve (example)

3.6**temperature-sensitive cut-off valve**

device which stops the gas flow when a predetermined temperature is exceeded

EXAMPLE Valve is held open, e.g. by a fusible metal, and actuated by sustained temperature rise. An example is given in [Figure 4](#).