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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Equipment used in gas welding, cutting and allied processes — Safety devices for fuel gases and oxygen or compressed air — General specifications, requirements and tests

Équipements de soudage aux gaz, de coupage et procédés connexes — Dispositifs de sécurité pour les gaz combustibles et l'oxygène ou l'air comprimé — Spécifications et exigences générales et essais

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5175 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*.

This first edition cancels and replaces the first edition of ISO 5175-1 published in 1983; ISO 5175 combines general specifications and requirements laid down in ISO 5175-1 and information on tests and test requirements that should have been published in ISO 5175-2.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Equipment used in gas welding, cutting and allied processes — Safety devices for fuel gases and oxygen or compressed air — General specifications, requirements and tests

1 Scope and field of application

This International Standard lays down the general specifications, requirements and tests of safety devices for fuel gases and oxygen or compressed air used downstream of cylinder or pipeline outlet regulators and of pipeline outlet valves, and upstream of blowpipes for welding, cutting and allied processes.

It does not specify location and combination of these devices in the gas system.

2 References

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

ISO 2503, *Pressure regulators for gas cylinders used in welding, cutting and allied processes.*

ISO 3253, *Hose connections for equipment for welding, cutting and related processes.*

ISO 9090, *Gas tightness of equipment for gas welding and allied processes.*¹⁾

ISO 9539, *Materials for equipment used in gas welding, cutting and allied processes.*¹⁾

¹⁾ At present at the stage of draft.

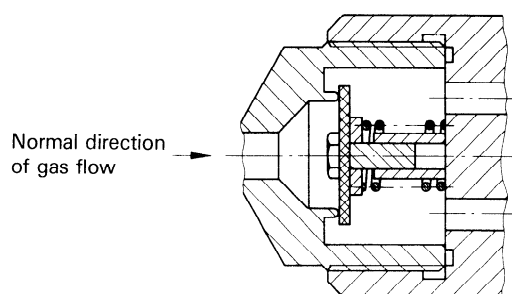
3 Definitions and functions

3.1 safety device: A device which, when correctly used and placed, prevents the damage resulting from misuse or malfunction of the blowpipe or associated equipment.

3.2 non-return valve: A device which prevents passage of gas in the direction opposite to normal flow.

Example:

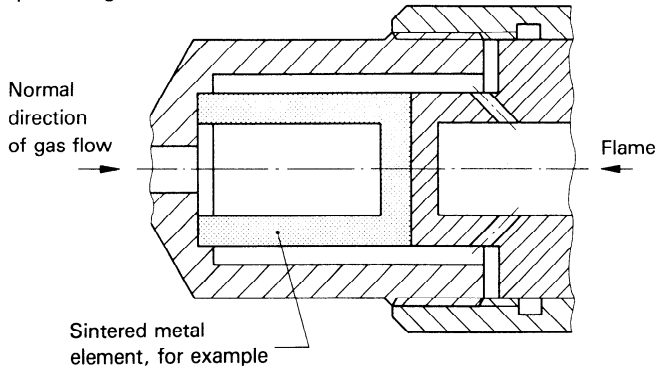
Valve is held open by energy in gas stream and closes when downstream pressure is approximately equal to or greater than that in normal direction of flow.



3.3 flame arrester: A device which quenches a flame front (flashback or decomposition). Depending on design, devices are effective in one or both directions.

Example:

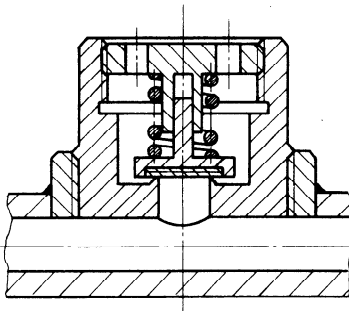
The good thermal conductivity, low porosity and small pore size (larger surface) of sintered metal elements lead to flame quenching.



3.4 pressure-relief valve: A device which automatically vents gas to the atmosphere when the pressure exceeds some predetermined value and seals again when the pressure returns to within specified limits of that value.

Example:

Valve is held closed by a spring; it opens when force caused by internal pressure rise exceeds the spring load.

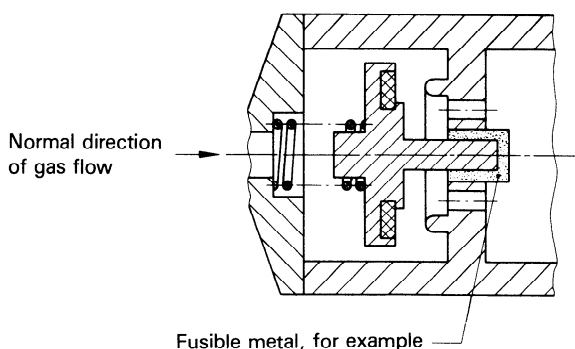


3.5 Cut-off valves

3.5.1 temperature-sensitive cut-off valve: A device which stops the gas supply when a predetermined temperature is reached.

Example:

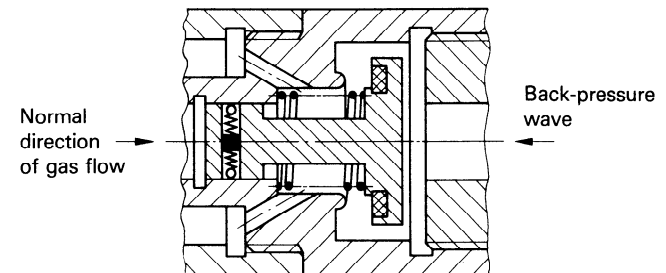
Valve is held open, e.g. by a fusible metal, and actuated by sustained temperature rise.



3.5.2 pressure-sensitive cut-off valve: A device which closes in the event of a back-pressure wave from the downstream side of the cut-off valve.

Example:

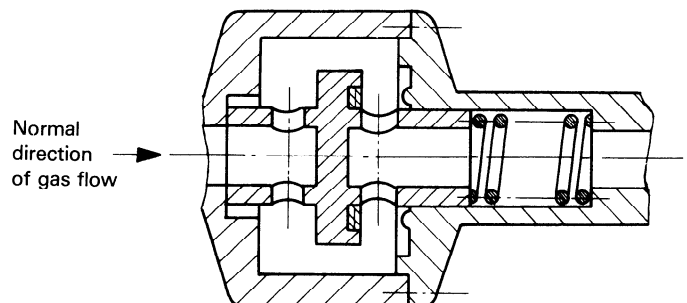
Valve is held open, e.g. by a spring; it is actuated by a pressure wave from downstream and is then automatically held closed by a special device.



3.5.3 excess flow cut-off valve: A device which closes in the event of flow exceeding a predetermined value.

Example:

Valve is held open by a spring; it closes when the force caused by the dynamic pressure becomes greater than the force of the spring. A resetting device is necessary.



4 Installation

The method of installing these devices (types selected, order of installation, etc.) varies with operating conditions. It is essential to follow the manufacturer's instructions regarding installation and operation and to ensure that the overall pressure drop due to the combination is as low as possible.

NOTE — It is possible to incorporate many of the functions described in clause 3 into one piece of equipment.

5 Design and materials

5.1 Design

The construction shall be suitable for the purpose intended and shall allow regular maintenance and routine inspection.