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Gas welding equipment — Acetylene manifold systems for welding, cutting and allied processes — General requirements

Matériel de soudage aux gaz — Centrales de détente pour la distribution d'acétylène pour le soudage, le coupage et les techniques connexes — Exigences générales

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Foreword

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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 third edition cancels and replaces the second edition (ISO 14114:2014), which has been technically revised with the following changes:

a) Clause 3 has been restructured;

b) 4.1 has been revised;

c) 5.3 has been revised;

d) Clause 6 has been revised;

e) Clause 7 has been revised;

f) Table A.1 has been revised;

g) Figures A.2 and A.4 have been revised and Figure A.5 has been deleted;

h) the title of Annex B has been modified.

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Gas welding equipment — Acetylene manifold systems for welding, cutting and allied processes — General requirements

1 Scope

This document applies to acetylene cylinder manifold systems extending from the cylinder valve or the bundle outlet connections to the outlet connection of the main shut-off valve. It specifies requirements for design, materials and testing of cylinder manifold systems for the supply of acetylene for use in welding, cutting and allied processes.

This document applies to acetylene cylinder manifold systems in which acetylene single cylinders or acetylene bundles are coupled for collective gas withdrawal.

NOTE National regulations exist regarding limitation of the amount of single cylinders/bundles of acetylene on a single location (e.g. in warehouse or connected to a manifold system).

This document also covers a test procedure for decomposition blockers.

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 5175 (all parts), *Gas welding equipment — Safety devices*

ISO 7291:2010, *Gas welding equipment — Pressure regulators for manifold systems used in welding, cutting and allied processes up to 30 MPa (300 bar).* Amended by ISO 7291:2010/Amd 1:2015

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 10961, *Gas cylinders — Cylinder bundles — Design, manufacture, testing and inspection*

ISO 14113, *Gas welding equipment — Rubber and plastics hose and hose assemblies for use with industrial gases up to 450 bar (45 MPa)*

ISO 15296, *Gas welding equipment — Vocabulary — Terms used for gas welding equipment*

ISO 15615:2013, *Gas welding equipment — Acetylene manifold systems for welding, cutting and allied processes — Safety requirements in high-pressure devices*

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 https://www.iso.org/obp

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

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3.1
acetylene manifold systems
assembly of devices generally linking one or more gas sources coupled to a user pipeline system, delivering a regulated pressure under specified safe conditions

Note 1 to entry: A manifold includes, for example, components like collectors, safety devices, and pressure regulators.

3.2
acetylene cylinder bundle
acetylene cylinder pack
assembly of cylinders fastened together, interconnected by a manifold for collective filling and gas withdrawal, and intended to be transported as a single unit

3.3
manifold high pressure pipework
pipework system extending from the outlet connection of acetylene cylinders or bundles at full charging pressure to the inlet of the pressure regulator, including as required hose assemblies or coiled metal pipes, piping and high pressure valves

3.4
flame arrestor
device which extinguishes a flame front

[SOURCE: ISO 15296:2017, 3.4.3.]

3.5 Low pressure valves

NOTE Low pressure is considered as $P \leq 1{,}5$ bar (0,15 MPa), given as gauge pressure.

3.5.1
temperature-sensitive cut-off valve
device that stops the gas flow when a predetermined temperature is reached

[SOURCE: ISO 15296:2017, 3.4.5, modified — “reached” has replaced “exceeded”.]

3.5.2
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

[SOURCE: ISO 15296:2017, 3.4.6.]

3.5.3
main shut-off valve
main valve downstream of the manifold system

3.5.4
pressure limiting device
device which limits the pressure downstream of the manifold regulator in the event of regulator failure or malfunction

3.5.5
low pressure non-return valve
device which prevents passage of gas in the direction opposite to normal flow

[SOURCE: ISO 15615:2013, 3.1, modified — “low pressure” has been added to the term and “normal” to the definition.]

3.6 High pressure valves

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NOTE High pressure is considered as P > 1,5 bar (0,15 MPa) up to 25 bar (2,5 MPa), given as gauge pressure.

3.6.1
automatic quick-acting shut-off device
self-acting device which closes quickly

Note 1 to entry: For example, when triggered by acetylene decomposition in the high pressure manifold pipework.

[SOURCE: ISO 15296:2017, 3.4.10, modified — the example has been transferred to a note to entry.]

3.6.2
high pressure stop valve
device to prevent, when closed, the flow of gas on the high pressure side

3.6.3
three-way valve
device composed of two upstream inlets of flow and one downstream outlet which allows flow from one upstream side to the downstream side, while isolating the other upstream side

Note 1 to entry: This definition differs from that of ISO 15615:2013, 3.6.

3.6.4
high pressure non-return valve
device which prevents passage of gas in the direction opposite to normal flow

[SOURCE: ISO 15615:2013, 3.1, modified — "high pressure" has been added to the term and "normal" to the definition.]

3.6.5
high pressure purge valve
device which enables a pipework system to reach atmospheric pressure or eliminate undesirable gases or residues by flushing

3.6.6
automatic pressure-actuated shut-off valve
device which automatically stops the gas supply to the regulator when the downstream pressure rises above the maximum operating pressure

[SOURCE: ISO 15615:2013, 3.5]

3.7
change-over unit
device in a two-sided system allowing switching the supply of gas to the system from either of its bank of cylinders or bundles without interrupting supply

Note 1 to entry: The switching action can be manually or automatically actuated.

3.8
pressure regulator for manifold systems
device for regulating a generally variable inlet pressure to as constant as possible an outlet pressure when controlling the output of a manifold of cylinders

[SOURCE: ISO 7291:2010, 3.1, modified — the note to entry has been deleted.]

3.9
decomposition blocker
safety device which stops acetylene decomposition incorporating a *temperature-* or *pressure-sensitive cut-off device* (3.5.1, 3.5.2)

3.10
high pressure filter
device to retain particles with a size of 100 µm or greater

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