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ISO
9012

Fourth edition

**Gas welding equipment — Air-
aspirated hand blowpipes —
Specifications and tests**

*Équipement de soudage aux gaz — Chalumeaux manuels aéro-gaz à
air aspiré — Spécifications et essais*

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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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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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 9012:2008), which has been technically revised.

The main changes are as follows:

- entries [3.4](#) and [3.5](#) added;
- in [Clause 4](#), the “types of aspiration” in [Figures 2](#) to [4](#) rearranged and [Table 1](#) revised;
- in [5.1.3](#), text revised and NOTES 1 and 2 added;
- in [6.5](#), ISO/TR 28821 referred to instead of the withdrawn ISO 3253;
- in [6.6](#), NOTES 1 and 2 added because there are cases where airtightness cannot be obtained even if the adjustment of air inlet (item 12) is set to the closed position;
- in [6.9](#), requirements added;
- in [7.1](#), the accuracy of gas pressure and flow rate measuring equipment from [7.7](#) added;
- in [7.6](#), the number of cycles for the life cycle test changed from 5 000 cycles to 1 500 cycles;
- in the Bibliography, ISO/TR 28821 referred to instead of the withdrawn ISO 3253.

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. Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

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Gas welding equipment — Air-aspirated hand blowpipes — Specifications and tests

1 Scope

This document specifies requirements and test methods for air-aspirated hand blowpipes.

This document applies to blowpipes for brazing, soldering, heating, fusion and other allied thermal processes which use a fuel gas and aspirated air (injector-type blowpipes) and are intended for manual use.

This document is applicable to:

- air-aspirated hand blowpipes which are fed with a fuel gas in the gaseous phase, at a controlled pressure by a regulator, through a gas supply hose;
- air-aspirated hand blowpipes which are fed with a liquefied fuel gas in the gaseous phase at the container pressure, through a gas supply hose;
- so-called liquid-phase blowpipes which are fed with a fuel gas in the liquid phase, and where thermal evaporation takes place within the blowpipe.

It does not apply to blowpipes in which the fuel gas leaves the injector in the liquid phase, or to so-called “cartridge” blowpipes where the gas supply is fixed directly onto the blowpipe and possibly constitutes the shank.

NOTE [Figures 1](#) to [4](#) are given for guidance only, to facilitate the explanation of the terms. They do not specify the construction details, which are left to the discretion of the manufacturer.

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 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*

3 Terms and definitions

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

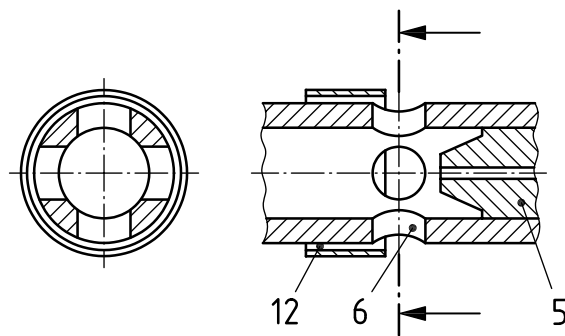
ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

**3.1
air-aspirated hand blowpipe**

blowpipe in which the fuel gas leaves the injector in the gaseous phase, being subsequently mixed in the mixing zone with a sufficient quantity of air, aspirated from the ambient atmosphere, to produce a technically usable flame

Note 1 to entry: See [Figure 1](#).



NOTE See [Table 1](#) for the key to [Figure 1](#).

Figure 1 — Schematic drawing of the mixing zone

**3.2
sustained backfire**

penetration of the flame into the blowpipe, with continued burning upstream of the part intended for this purpose, i.e. within:

- the blowpipe nozzle, behind the grid or flame-supporting devices;
- the tube;
- the blowpipe shank

**3.3
blowing-off of the flame**

detachment of the flame from the blowpipe nozzle, possibly causing the flame to be extinguished

**3.4
maximum flow rate**

flow rate of fuel gas of the blowpipe obtained by fully opening the valve at the maximum inlet pressure given by the manufacturer

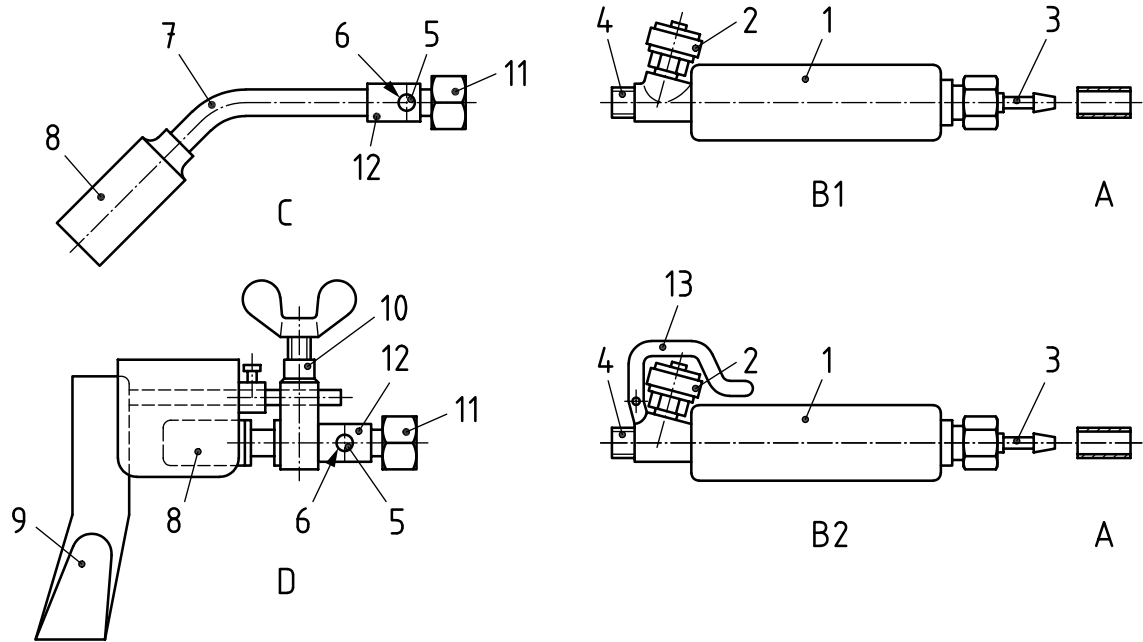
**3.5
minimum flow rate**

flow rate of the proper fuel gas flow range at the minimum inlet pressure given by the manufacturer

4 Main types of aspiration

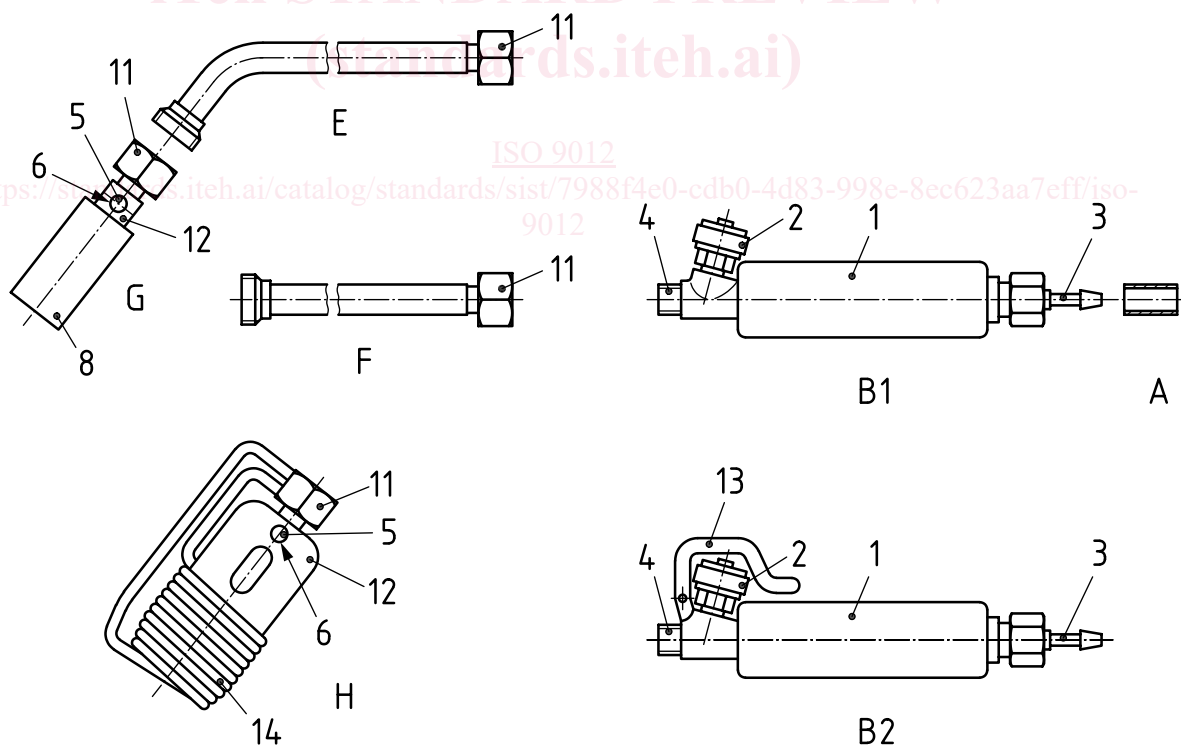
Depending on the location of the mixing zone, a distinction is made between blowpipes with air aspiration in the:

- a) attachment (see [Figure 2](#));
- b) nozzle (see [Figure 3](#));
- c) shank (see [Figure 4](#)).



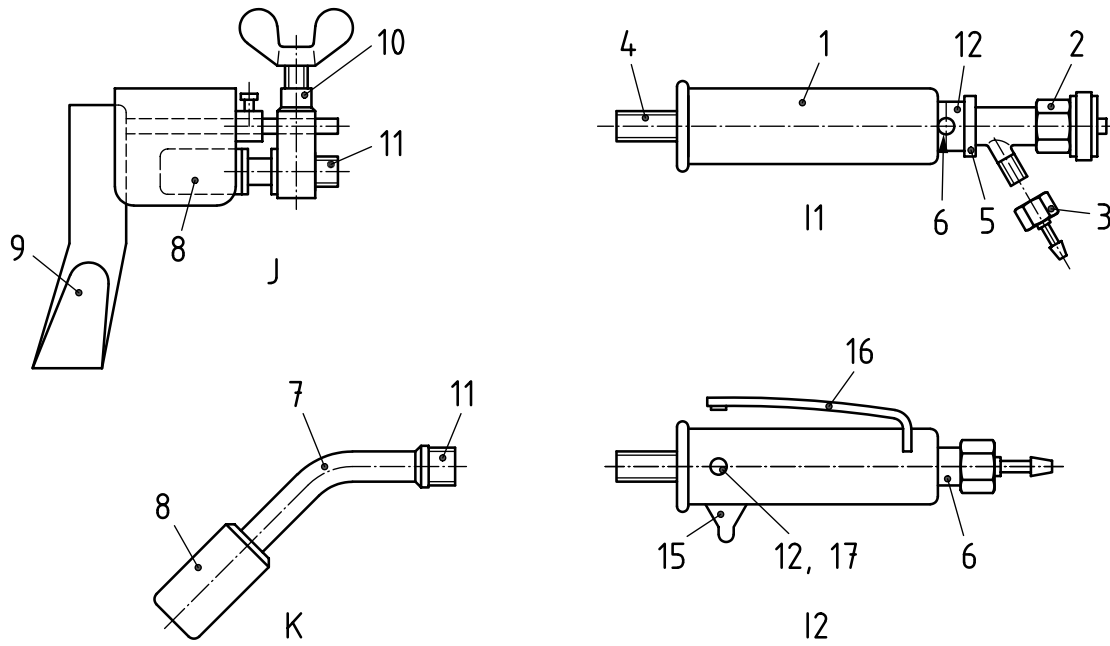
NOTE See [Table 1](#) for the key to [Figure 2](#).

Figure 2 — Examples of blowpipes with air aspiration in the attachment



NOTE See [Table 1](#) for the key to [Figure 3](#).

Figure 3 — Examples of blowpipes with air aspiration in the nozzle



NOTE See Table 1 for the key to Figure 4.

Figure 4 — Examples of blowpipes with air aspiration in the shank

Table 1 — Key for Figures 1 to 4

Assemblies		Items	
A	hose	1	handle
B	shank	2	valve
C	attachment with air aspiration	3	hose connection
D	soldering attachment with air aspiration with a copper bit	4	head connection
E	bent tube	5	injector
F	straight tube	6	air inlet
G	blowpipe nozzle with air aspiration	7	tube (may include air inlet)
H	liquid-phase nozzle with air aspiration	8	blowpipe nozzle
I	injector-type shank	9	soldering bit
J	attachment for bit soldering	10	bit support
K	attachment (without injector)	11	connection
B1	shank without control of automatic flame-reducing device	12	adjustment of air inlet
B2	shank with control of automatic flame-reducing device	13	control of automatic flame-reducing device
I1	shank without on/off valve control	14	vaporization for system liquid-phase blowpipe
I2	shank with on/off valve control	15	ignition system
		16	on/off valve control
		17	fixed orifice (I2)