INTERNATIONAL STANDARD

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# 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

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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 9012 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 9012:1998), which has been technically revised.



Requests for official interpretations of any aspect of this International Standard 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 — Air-aspirated hand blowpipes — Specifications and tests

## 1 Scope

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

This International Standard 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 International Standard 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 of this International Standard 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 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 554, *Standard atmospheres for conditioning and/or testing — Specifications*

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

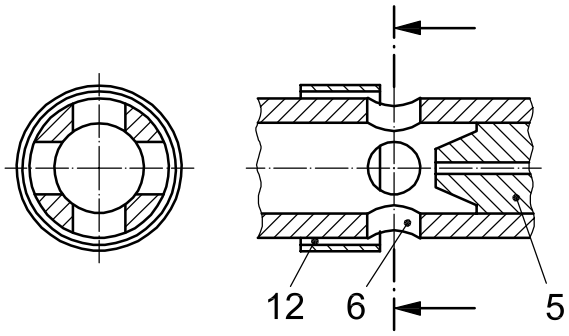
ISO 9539, *Materials for equipment used in gas welding, cutting and allied processes*

## 3 Terms and definitions

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

**3.1**
**air-aspirated 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

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

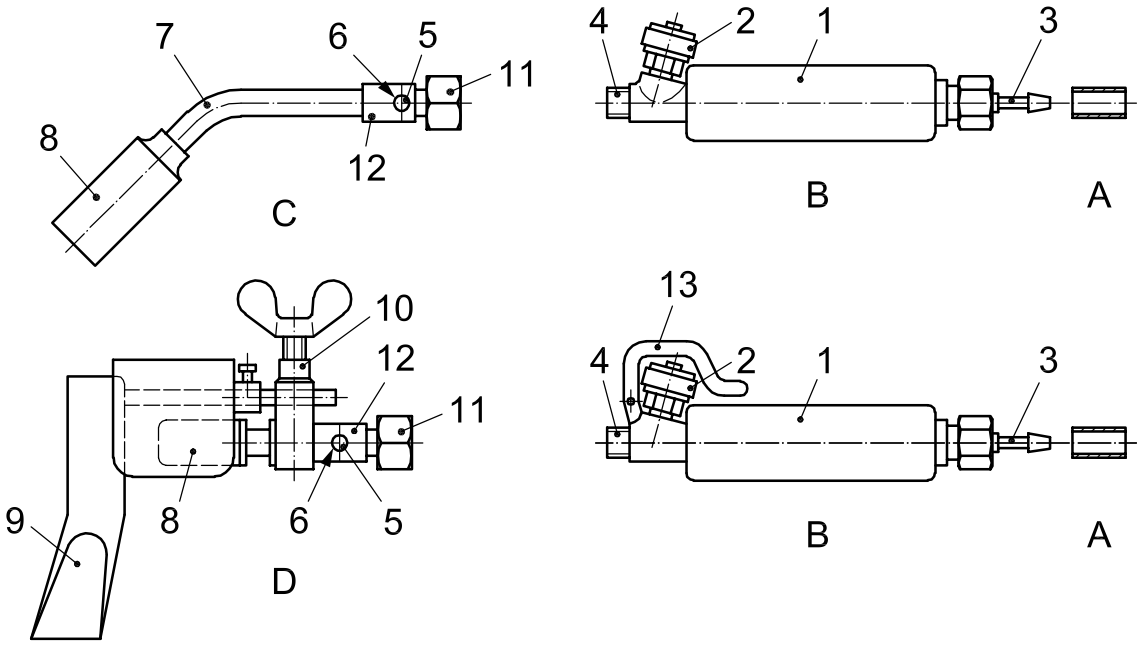
## 4 Main types of aspiration

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);

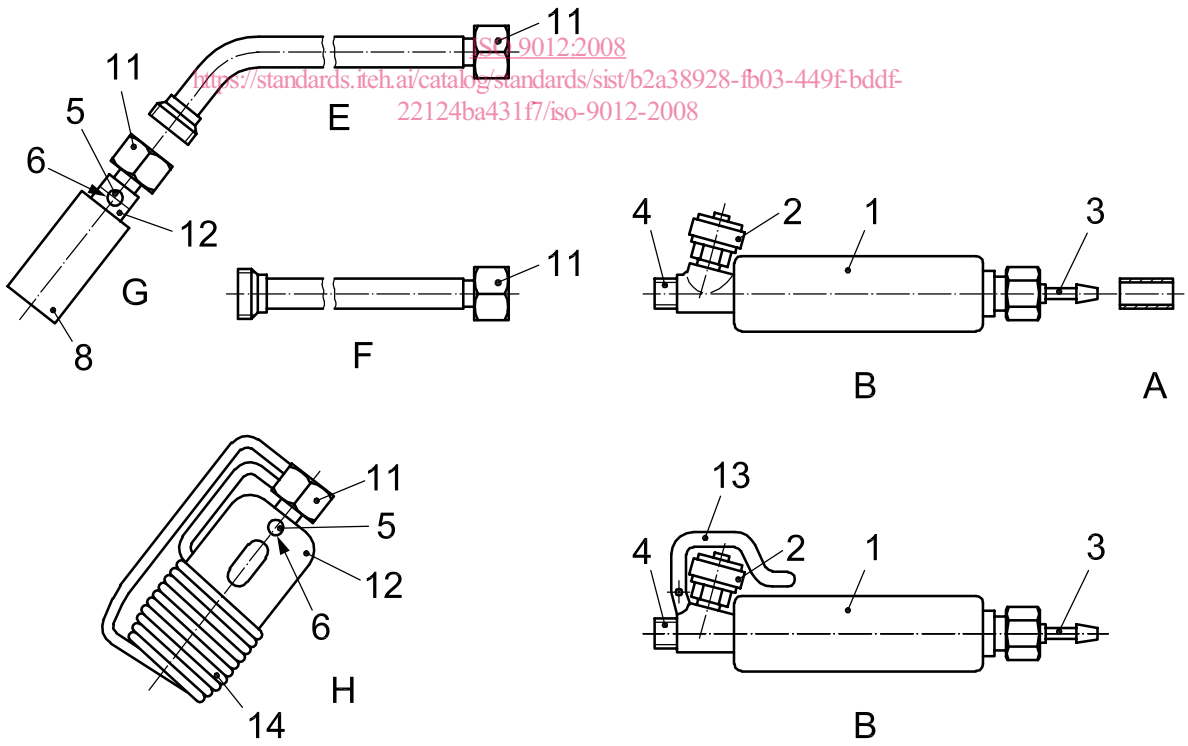
c) shank (see Figure 4).




NOTE See Table 1 for the key to Figure 2.

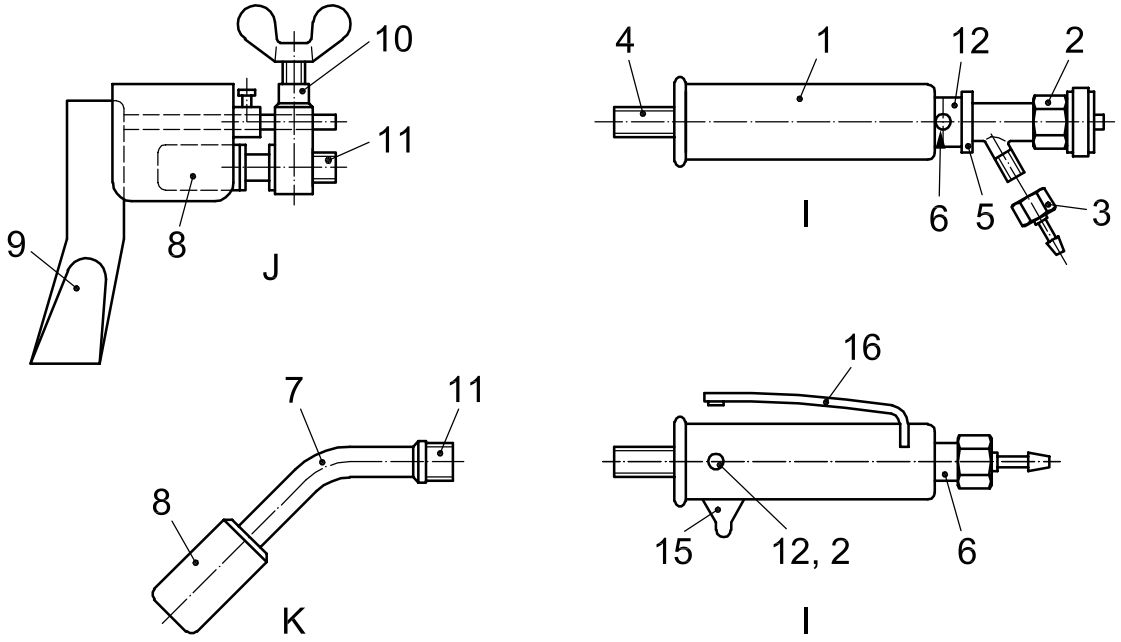
**Figure 2 — Examples of blowpipes with air aspiration in the attachment**






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 — Labels 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 |
| | | 12 | adjustment of air inlet |
| | | 13 | control of automatic flame-reducing device |
| | | 14 | vaporization for system liquid-phase blowpipe |
| | | 15 | ignition system |
| | | 16 | on/off valve control |

# 5 Description of components

## 5.1 Shank or handle (see Figures 2 and 3, assembly B, and Figure 4, assembly I)

### 5.1.1 General

The shank is used for holding the attachment. It includes the system for fitting the hose and the gas control device(s). It may also include the injector (see Figure 4, assembly I).

### 5.1.2 Valve shank (see Figures 2 and 3, assembly B, and Figure 4, assembly I)

This type of shank is fitted with a single valve (item 2) for opening, shutting and regulating the gas-flow rate.

### 5.1.3 Shank with automatic flame-reducing device (see Figures 2 and 3, assembly B)

This type of shank is fitted with two separate control devices:

— a valve (item 2) which controls the gas-flow rate under normal working conditions, e.g. a knob;

— an automatic flame-reducing device (item 13) operated by a simple release mechanism, e.g. a trigger.

### 5.1.4 Shank with pressure-control or pressure-reducing device

This type of shank is fitted with a device for the control or reduction of gas pressure.



### 5.1.5 Shank with ignition system

This shank is fitted with a valve or an on/off valve control for the gas and with an ignition system acting simultaneously or separately.



## 5.2 Attachment

### 5.2.1 General

The attachment is generally composed of a nozzle or burner and a tube.

### 5.2.2 Nozzle or burner (see Figures 2, 3 and 4, assemblies G, H and item 8)

The shape of the nozzle depends on the work to be performed, for example:

— brazing or soldering;

— heating;

— paint removal;

— drying;

— bit soldering.

The nozzle may include the injector (see Figure 3, item 5) as well as the supports and automatic lighting devices of the blowpipe. In liquid-phase blowpipes, the nozzle also incorporates the vaporization device (see Figure 3, item 14).

NOTE Figures 2, 3 and 4 show only limited examples of blowpipes nozzles. The nozzles come in a great variety of shapes, particularly in the case of multiflame blowpipes for circumferential heating, etc.