SLOVENSKI STANDARD
SIST CR 13259:1999

01-december-1999

Oprema za plamensko varjenje ï Roļ ni in strojni gorilniki za industrijsko uporabo za plamensko segrevanje in sorodne postopke

Gas welding equipment - Industrial manual and machine oxygen-fuel gases blowpipes for flame heating and allied processes

Gasschweißgeräte - Hand- und Maschinenbrenner für den industriellen Einsatz zum Flammwärmen und für verwandte Verfahren

Matériel de soudage aux gaz - Chalumeaux manuels et oxy-gaz combustible (type machine), a usage industriel, pour le chauffage a la flamme et les techniques connexes

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This Technical report was prepared by the Technical Committee CEN/TC 121 "Welding", of which the secretariat is held by DS.

The Technical Committee agreed to publish this Technical report.

1 Scope

This Technical report gives safety recommendations for industrial manual and machine oxygen-fuel gases blowpipes for flame heating and allied processes (e.g. flame straightening, flame cleaning, flame heat treatment and quenching, etc.), which are not covered by EN 874 and EN ISO 5172.

This Technical report is applicable to manual and machine blowpipes which are fed with oxygen, compressed air and a fuel gas (e.g. acetylene, MPS, propane, natural gas, LPG, hydrogen, etc.), in a gaseous state.

2 Normative references

This Technical report incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this technical report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 559
Gas welding equipment – Rubber hoses for welding, cutting and allied processes

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

EN 730
Gas welding equipment – Equipment used in gas welding, cutting and allied processes, safety devices for fuel gases and oxygen or compressed air – General specifications, requirements and tests

EN 874
Gas welding equipment – Oxygen/fuel gas blowpipes (cutting machine type) of cylindrical barrel – Type of construction, general specifications, test methods

EN 29090
Gas tightness of equipment for gas welding and allied processes (ISO 9090:1989)

EN 29539
Materials for equipment used in gas welding, cutting and allied processes (ISO 9539:1988)

EN ISO 5172
Manual blowpipes for welding, cutting and heating – Specifications and tests (ISO 5172:1995, including Amendment 1 : 1995)

ISO 554 : 1976
Standard atmospheres for conditioning and/or testing – Specifications

3 Definitions

For the purpose of this Technical report, the following definitions apply in addition to those given in EN ISO 5172 for manual blowpipes and in EN 874 for machine oxygen/fuel gas blowpipes :

3.1 Manual blowpipe

Blowpipe which is handled by the operator during its operation.

3.2 Machine blowpipe

Blowpipe being fixed to and guided by a mechanical device during its operation.

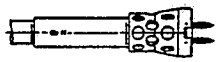
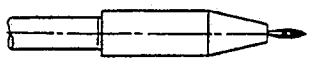
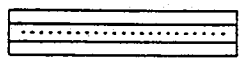
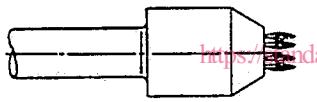
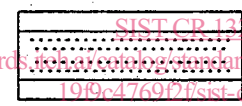
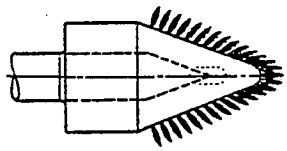
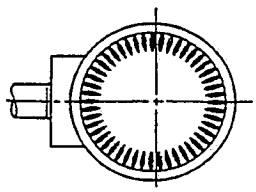
3.3 Common types of mixing systems

The injector-mixer and mixer without injector action are defined in EN ISO 5172.

3.4 Shapes of burners

The shape of a burner is determined by its application. Table 1 shows examples of shapes of burners.

Table 1 : Examples of shapes of burners

Type of burners	Flame field	Inset H = Hand M = Machine	Applications	Symbols
Single-flame burner 		H	Pre-heating Flame straightening Heat-shaping	LH
Multiple-flame burner 		H	Pre-heating Flame straightening Heat-shaping	MH
Single-line burner 		H/M	Flame cleaning Heat-shaping	SLH SLM
Multi-line burner 		M	Flame heating Heat-shaping	MLM
Profile burner 		M	Flame hardening Heat-shaping	PM
Ring burner 		M	Pre-heating Heat-shaping	RM

3.4.1 Single-flame burner

The burner´s flame field consists of a single flame.

3.4.2 Multiple-flame burner

The burner´s flame field consists of one or several concentric circles.

3.4.3 Single-line burner

The burner´s flame field is formed by a single row of flames. Flame holes run in a straight line along the burner´s head.

3.4.4 Multi-line burner

The burner´s flame field is formed by several rows of flames, whose number and corresponding location is determined by the specific application.

3.4.5 Profile burner

The burner´s geometry and the flame field's shape is determined by its application.

3.4.6 Ring burner

The burner's flame field surrounds or covers the workpiece in a circle.

3.5 Ignition device

A separate energy source in or on the burner's top which guarantees ignition of the emitted fuel-gas mixtures from the flame holes.

3.6 Flame support

Permanent flame which stabilizes the main flames during operation.

3.7 Gas nominal flow rate

Gas flow rate, expressed in m^3/h at normal conditions [1], at the inlet pressure indicated by the manufacturer.

3.8 Ratio of mixture

Ratio of oxidizing gas nominal flow rate versus fuel gas nominal flow rate.

3.9 Minimal working pressures

Minimal pressures, expressed in bar (MPa), which guarantee a safe operation of the blowpipe.

4 Blowpipe design

4.1 Manual blowpipe

Examples of manual blowpipe are given in figure 1.

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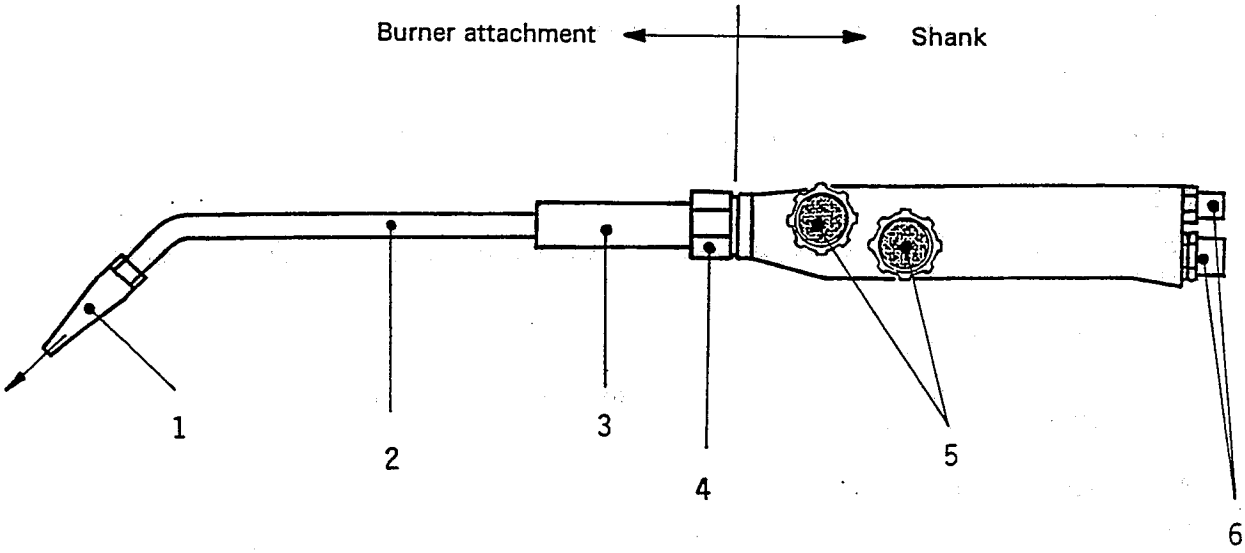
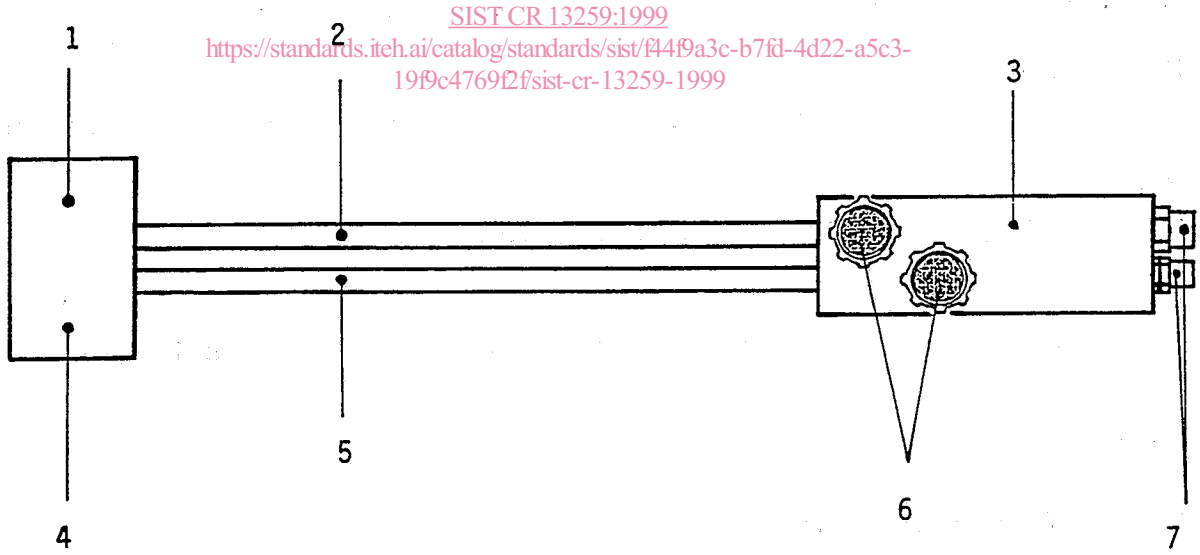
1) Normal conditions are given in ISO 554.



1 Burner nozzle
2 Neck or mixed gas channel
3 Mixing chamber and mixer
4 Coupling nut
5 Gas control valves
6 Threaded unions

a) Injector-type blowpipe



1 Burner nozzle
2 Oxygen tube
3 Shank
4 Mixing chamber and mixer(s)
5 Fuel gas tube
6 Gas control valves
7 Threaded unions

b) Mixing in the burner nozzle-type blowpipe

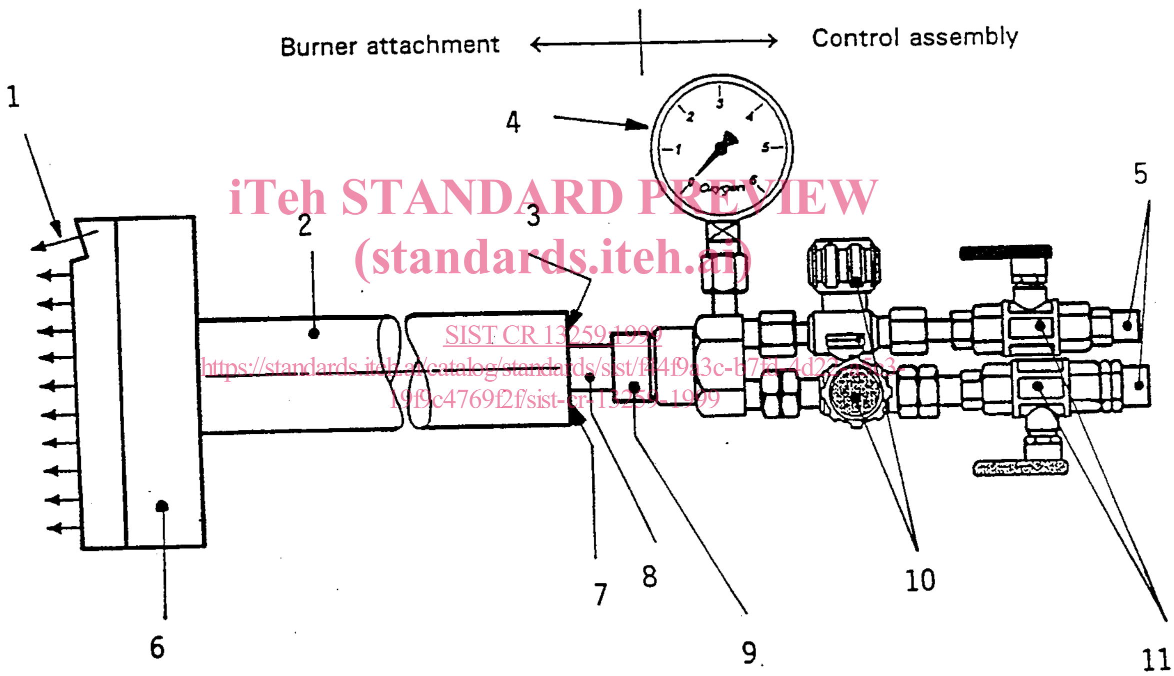
Figure 1 : Structural principle of a manual blowpipe

A manual blowpipe consists of the following elements :

- shank:
  - gas control valves;
  - threaded unions.
- burner attachment:
  - burner nozzle;
  - neck or mixed gas channel;
  - mixing chamber and mixer;
  - coupling nut for fastening burner attachment into shank.

4.2 Machine blowpipe

An example of machine blowpipe is given in figure 2.



1 Ignition device
2 Shank
3 Connection for cooling agent
4 Pressure gauge for oxidizing gas
5 Threaded unions
6 Burner head
7 Connection for ignition media
8 Mixing chamber and mixer
9 Coupling nut
10 Gas control valves closing valves
11 Quick-acting closing valves

Figure 2 : Structural principle of a machine blowpipe (injector type blowpipe)