



SLOVENSKI STANDARD

SIST EN 50192:1999

01-julij-1999

Arc welding equipment - Plasma cutting systems for manual use

Arc welding equipment - Plasma cutting systems for manual use

Lichtbogenschweißeinrichtungen - Plasmaschneidsysteme für Handbetrieb

Matériel de soudage à l'arc - Systèmes de coupage plasma manuel

Ta slovenski standard je istoveten z: EN 50192:1995

[SIST EN 50192:1999](https://standards.iteh.ai/catalog/standards/sist/103c604d-8309-4f44-bedc-fd6d73b3254d/sist-en-50192-1999)

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ICS:

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English version

**Arc welding equipment
Plasma cutting systems for manual use**

Matériel de soudage à l'arc
Systèmes de coupage plasma manuel

Lichtbogenschweißeinrichtungen
Plasmaschneidsysteme für Handbetrieb

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Page 2
EN 50192:1995

Foreword

This European Standard was prepared by Technical Committee TC26A, Electric arc welding equipment.

It was submitted to the CENELEC members for formal vote in February 1995 and was approved by CENELEC as EN 50192 on 1995-09-20.

The following dates were proposed:

- latest date of announcement
of the EN at national level (doa) 1996-01-01
- latest date of publication of an
identical national standard (dop) 1996-07-01
- latest date of withdrawal of
conflicting national standards (dow) 1996-07-01

For products which have complied with the relevant national standard before 1996-07-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2001-07-01.

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CONTENTS

1	Scope	4
2	Normative References	4
Additional requirements to EN 50078		
4.20	Plasma cutting torch	4
4.21	Plasma cutting system	4
4.22	Plasma tip	4
5	Classification	4
5.1	Process	4
5.5	Method of striking the main arc	4
7.2	Dielectric strength	4
7.3.2	Plasma tips	5
8.2.3	Plasma cutting torch	5
11	Instructions for use	6
Additional requirements to EN 60974-1		
4.1a	Plasma cutting power source	8
10.1.4	Rated no-load voltage for plasma cutting systems	8
10.2.5	Plasma cutting	8
10.2.6	Plasma gouging	8
10.4.5	Marking of dc polarity	8
10.4.6	Connections for plasma cutting cable-hose assemblies	8
14	Rating plate	8
14.2	Contents	8
15	Indication of current or voltage control	9
16	Instructions for use	9
17	Warning	9
18	Marking of the gas connections	9
Table		
10	Test values for plasma cutting	6
Figure		
1a	Turntable	6
Annex		
D	Copper block with a hole	7
E	Copper bars with a slot	7

Page 4
EN 50192:1995

1 Scope

This standard is applicable to systems for manual plasma cutting/gouging. It shall be used in conjunction with EN 50078 and EN 60974-1.

This standard is not applicable to mechanized plasma cutting systems and for plasma cutting/gouging under water.

2 Normative References

This Draft European Standard 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 Draft European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 50078:1993	Torches and guns for arc welding
EN 60974-1:1990	Arc welding equipment Part 1: Welding power sources (IEC 974-1:1989)
EN 60529:1991	Degrees of protection provided by enclosures (IP Code) (IEC 529:1989)

Additional requirements to EN 50078

The clause numbers given below refer to the relevant clauses of EN 50078.

4.20 Plasma cutting torch

A plasma torch for cutting/gouging. [SIST EN 50192:1999](https://standards.iteh.ai/catalog/standards/sist/103c604d-8309-4f44-bedc-fd6d73b3254d/sist-en-50192-1999)

4.21 Plasma cutting system

A system for plasma cutting/gouging consisting of a plasma power source, plasma torch, cable-hose assembly and associated safety devices.

4.22 Plasma tip

A component surrounding the electrode that provides the constricting orifice through which the arc passes.

Addition to

5 Classification

f) method of striking the main arc (see 5.5)

Addition to

5.1 Process

e) Plasma cutting/gouging

5.5 Method of striking the main arc

- by an arc striking device
- by a pilot arc between electrode and plasma tip
or
- by contact.

Addition to

7.2 Dielectric strength

NOTE - During the dielectric strength test the electrode and plasma tip connections should be electrically connected together.

7.3.2 Plasma tips

Plasma tips, that for technical reasons cannot be protected against direct contact according to table 2 of EN 50078, are considered to be sufficiently protected:

1. when no arc is present, (resistance between plasma tip and workpiece above 200 Ω):
if the voltage between the plasma tip and the workpiece and/or earth is not higher than 68 V peak and 48 V rms;
and
2. when an arc is present:
 - a) if the sides of the plasma tip cannot be contacted by the test finger according to EN 60529 when it is placed on a flat surface with its centerline perpendicular to it;
or
 - b) if the dc voltage between the plasma tip and the workpiece and/or earth is not under any circumstances higher than 113 V peak.

The conditions for complying with these requirements shall be given in the instructions for use.

Compliance is checked:

for 1. and 2.b): by measurement according to 10.1b) of EN 60974-1, together with the corresponding plasma cutting power source and

for 2.a): by applying the test finger according to EN 60529.

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Addition to 8.2:

8.2.3 Plasma cutting torch

The torch shall be tested:

1. at the rated current with 60 % duty cycle (duty factor) and at the maximum rated current with its corresponding duty cycle (duty factor) as specified by the manufacturer;
2. with the type of gas and flow rate as specified by the manufacturer;
and
3. at the distance between plasma tip and workpiece as specified by the manufacturer with one of the following test arrangements:

a) Copper block, according to Annex D or similar, with a hole (suitable for use up to 75 A)
The torch shall be positioned perpendicular to the upper horizontal face of the copper block and centered to the hole.

b) Copper bars with a slot, according to Annex E or similar (suitable for use up to 200 A)
The torch shall be positioned perpendicular to the upper horizontal face of the copper bars, centered between them and moved about 500 mm backwards and forwards.

c) Cutting (suitable for all currents)

The torch shall be positioned perpendicular to a mild steel sheet. In order to reduce scrap, it is permissible to arrange the cutting such, so that the arc indexes approximately one kerf width per pass.

For a duty cycle (duty factor) lower than 100 % there shall be a new start after each stop. All cuts shall start at the edge of the steel sheet.

Test values are given in table 10.

Table 10 - Test values for plasma cutting

Cutting current A	Cutting speed ^{x)} cm/min	Thickness of the ^{x)} mild steel sheet mm
up to 30	3 to 5	up to 5
31 to 50	5 to 7	6 to 10
51 to 80	2 to 3	11 to 20
81 to 120	2 to 3	21 to 30
121 to 250	2 to 4	31 to 60
251 to 500	1 to 2,5	61 to 120

^{x)} recommended values

For the cutting test the following or equivalent may be used:

- 1) a cross-carriage cutting table
or
- 2) a turntable with speed regulation (see figure 1a).

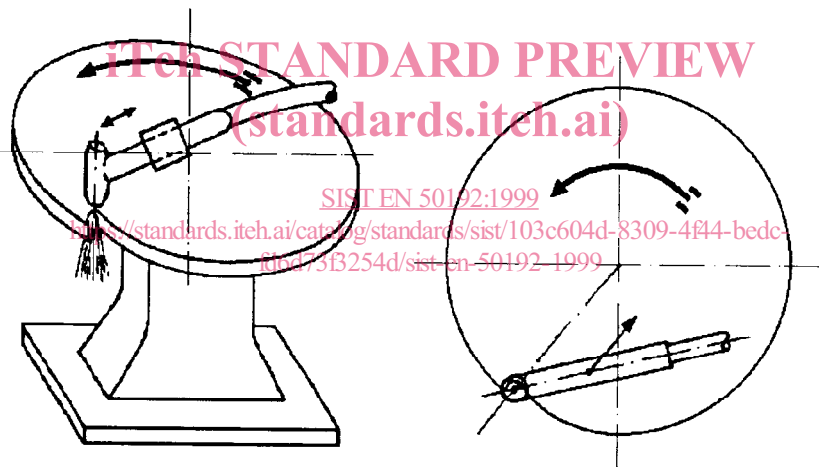


Figure 1a - Turntable

Addition to

11 Instructions for use

- d) Replace by:
 - the relationship e.g. in a table between:
 - 1) rated current at 60 % duty cycle (duty factor) and maximum rated current;
 - 2) corresponding duty cycles (duty factors);
 - 3) type of gas, flow rate and/or operating pressure;
 - 4) length of the cable-hose assembly
 and
 - 5) proper combinations of plasma tip, nozzle and electrode types
- e) Replace by:
 - maximum and minimum gas pressure at the inlet;
- j) essential information about the safe operation of the plasma cutting torch and the functioning of interlocking and safety devices, e.g. both plasma cutting torch and plasma cutting power source shall form a safe system;
- k) type (identification) of plasma cutting power source or sources that can form a safe system with the plasma cutting torch;
- l) plasma cutting ability, e.g. thickness and type of material and the relevant cutting speed;

- m) conditions under which extra precautions are to be observed during plasma cutting (e.g. environment with increased hazard of electric shock, flammable surroundings, flammable products, elevated working positions, ventilation, noise, cutting of closed containers etc.).

Annex D (informative)

Copper block with a hole

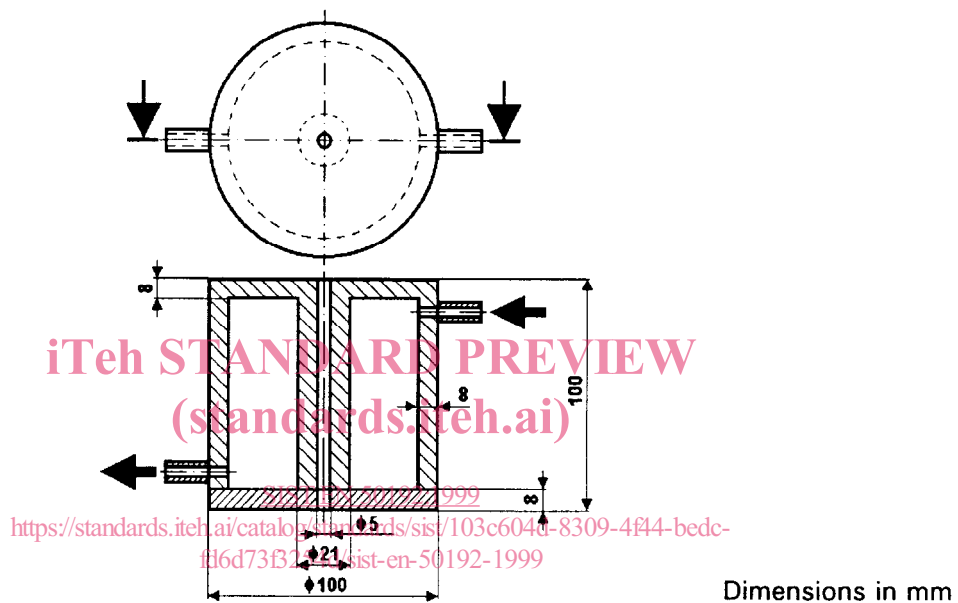


Figure D.1 Example for a water cooled copper block with a hole

Annex E (informative)

Copper bars with a slot

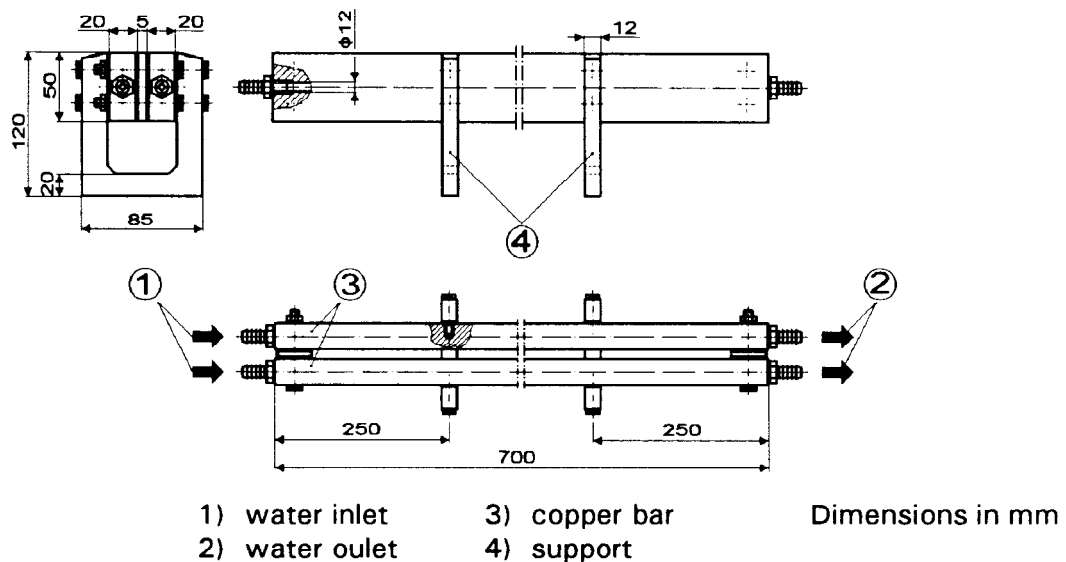


Figure E.1 - Example for water cooled copper bars with a slot