
**Welding personnel — Approval testing of
welding operators for fusion welding and of
resistance weld setters for fully mechanized
and automatic welding of metallic materials**

*Personnel en soudage — Épreuve de qualification des opérateurs soudeurs
pour le soudage par fusion et des régleurs en soudage par résistance pour
le soudage automatique et entièrement automatique des matériaux
métalliques*



Foreword

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International Standard ISO 14732 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 11, *Approval requirements for welding and allied processes personnel*.

Annexe A forms an integral part of this International Standard, annexes B to D are for information only.

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Introduction

This International Standard is intended to provide the basis for the mutual recognition by examining bodies for approval related to the competence of welding operators and resistance weld setters in the various fields of application. Tests shall be carried out in accordance with this International Standard unless more severe tests are specified by the relevant application standard when these shall be applied.

In order to make this International Standard applicable for fusion and resistance welding the terminology, especially for welding operators in the field of fusion welding and for resistance weld setters in the field of resistance welding, was clarified.

The welding operator's/resistance weld setter's ability and job knowledge continue to be approved only if the welding operators/resistance weld setters are working with reasonable continuity on welding work within the extent of approval.

All new approvals are to be in accordance with this International Standard from the date of issue.

However, this International Standard does not invalidate previous approvals made to former national standards or specifications, provided that the intent of the technical requirements be satisfied and the previous approvals be relevant to the application and production work on which they are to be employed.

Also, where additional tests have to be carried out to make the approval technically equivalent it is only necessary to do those additional tests that should be made in accordance with this International Standard.

Considerations of previous approvals to former national standards or specifications should be made at the time of the enquiry or contract stage and be agreed between the contracting parties.

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1 Scope

This International Standard specifies requirements for approval of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding processes of metallic materials. Only welding operators/resistance weld setters responsible for the setting up and/or adjustment during welding have to be approved. Personnel exclusively performing the programming of the welding unit or operation of the welding unit do not need any particular approval.

This International Standard is applicable when approval testing of operators/resistance weld setters is required by the contract or by the application standard.

This International Standard does not apply to welding operators in resistance welding (see 3.10) or under hyperbaric conditions.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 857-1:—¹⁾, *Welding and allied processes — Part 1: Welding processes — Vocabulary.*

ISO 9956-2:1995, *Specification and approval of welding procedures for metallic materials — Part 2: Welding procedure specification for arc welding.*

ISO 9956-3:1995, *Specification and approval of welding procedures for metallic materials — Part 3: Welding procedure tests for the arc welding of steels.*

ISO 9956-4:1995, *Specification and approval of welding procedures for metallic materials — Part 4: Welding procedure tests for arc welding of aluminium and its alloys.*

ISO 9956-8:1995, *Specification and approval of welding procedures for metallic materials — Part 8: Approval by a pre-production welding test.*

ISO 9956-10:1996, *Specification and approval of welding procedures for metallic materials — Part 10: Welding procedure specification for electron beam welding.*

ISO 9956-11:1996, *Specification and approval of welding procedures for metallic materials — Part 11: Welding procedure specification for laser beam welding.*

1) To be published. (Revision of ISO 857:1990)

ISO 10447:1991, *Welding — Peel and chisel testing of resistance spot, projection and seam welds*.

ISO 14731:1997, *Welding coordination — Tasks and responsibilities*.

3 Definitions

For the purpose of this International Standard, the classification of manual welding and partly mechanized welding according to table 1 of ISO 857: —, and the following definitions apply.

3.1 automatic welding:

Welding where all operations are performed automatically and manual adjustment of welding variables during welding is not possible.

3.2 function test:

Test of a welding unit set-up in accordance with a Welding Procedure Specification (WPS).

3.3 fully mechanized welding:

Welding where all main operations (excluding the handling of the work piece) are performed automatically but manual adjustment of welding variables during welding is possible.

3.4 pre-production welding test:

Welding test having the same function as a welding procedure test, but based on a non-standard test piece, simulating production conditions.

3.5 production test:

Welding test carried out in the production environment on the welding unit, on actual products or on simplified test pieces, the main characteristic of such a test being that normal production is interrupted during this test.

3.6 production sample testing:

Sample testing of actual welding products sampled from a continuous production using the welding unit, no interruption of normal production during sampling being necessary.

3.7 programming:

Incorporation of the approved welding procedure specification and/or the specified movements of the welding unit into a programme.

3.8 robotic welding:

Automatic welding using a manipulator that can be pre-programmed to different welding directions and fabrication geometries.

3.9 setting-up:

Correct adjustment of the welding unit before welding, if required by entering the robot programme.

3.10 welding operator:

3.10.1 In fusion welding a person who performs fully mechanized or automatic welding.

3.10.2 In resistance welding a person who uses equipment with mechanized or fully mechanized relative movement between the welding gun and the workpiece and who has followed a training course covering such tasks (see also clause 1).

3.11 resistance weld setter:

In resistance welding a person who sets up mechanized or automatic welding.

3.12 welding unit:

Totality of equipment used to perform welding consisting of jigs and fixtures, one or more robots, feeding units and other ancillary equipment including equipment which can perform loading and unloading of the work pieces.