SLOVENSKI STANDARD
oSIST prEN ISO 16946:2023

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Neporušitvene preiskave - Ultrazvočno preskušanje - Specifikacija za kalibracijo stopničastega klinastega bloka (ISO/DIS 16946:2023)

Non-destructive testing - Ultrasonic testing - Specification for a step wedge calibration block (ISO/DIS 16946:2023)

Zerstörungsfreie Prüfung - Ultraschallprüfung - Beschreibung des Stufenkeil-Kalibrierkörpers (ISO/DIS 16946:2023)

Essais non destructifs - Essais par ultrasons - Spécification relatives au bloc d'étalonnage à gradins (ISO/DIS 16946:2023)

Ta slovenski standard je istoveten z: **prEN ISO 16946**

ICS:

19.100	Neporušitveno preskušanje	Non-destructive testing

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Non-destructive testing — Ultrasonic testing — Specification for a step wedge calibration block

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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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee *[or Project Committee]* ISO/TC 135, *Non-destructive testing*, Subcommittee SC 3, *Ultrasonic testing*.

This third edition cancels and replaces the second edition (ISO 16946:2017), which has been technically revised.

The main changes are as follows:

— Figure 1 is modified;

— a CAD file of the step wedge calibrationblock is added;

— the structure of Clause 4 is aligned with ISO 2400 and ISO 7963;

— Clause 7 is aligned with ISO 7963.

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.

Introduction

A step wedge calibration block is not meant to check an ultrasonic instrument. A step wedge calibration block makes it possible, during practical testing, to check simply, from time to time, the setting of the time base and the sensitivity of the ultrasonic equipment.

Calibration block No. 1 is specified in ISO 2400.

Calibration block No. 2 is specified in ISO 7963.

Calibration block for phased array testing is specified in ISO 19675.

Non-destructive testing — Ultrasonic testing — Specification for a step wedge calibration block

1 Scope

This document specifies the requirements for the dimensions, material, and manufacture of a steel step wedge calibration block for the setting of ultrasonic test equipment.

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 5577, *Non-destructive testing — Ultrasonic testing — Vocabulary*

EN 10025-2, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5577 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/

4 Manufacture

4.1 Steel

Blocks shall be manufactured from steel grade S355J0, specified in EN 10025-2, or from steel of an equivalent grade.

4.2 Dimensions

a) The dimensions of the block shall be as shown in Figure 1.

NOTE A CAD file of the block can be downloaded from https://standards.iso.org/iso/16946/ed-3/en.

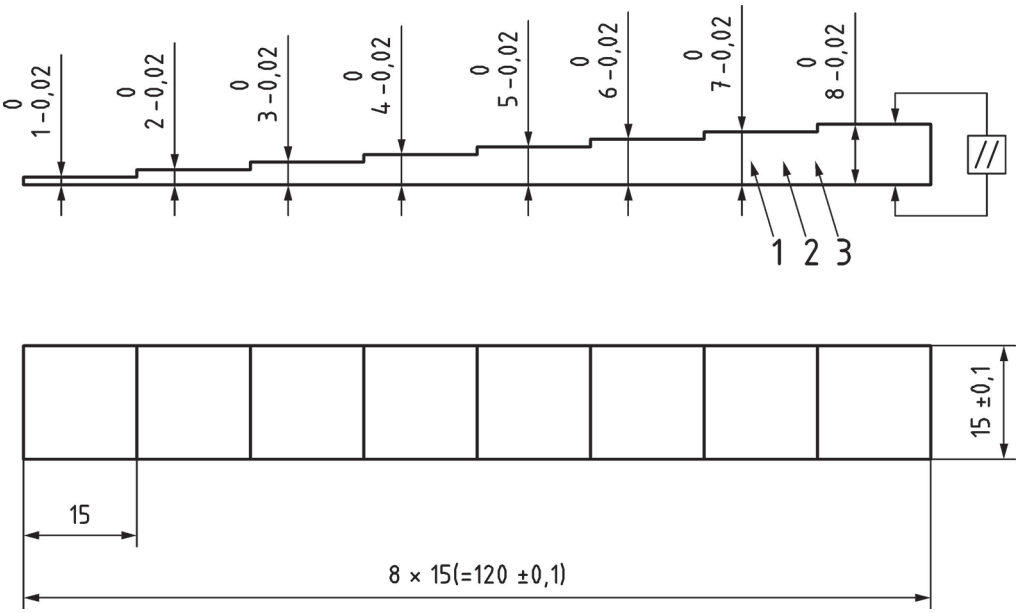
b) The tolerances are ±0,1 mm for the length and the width of the block.

c) The tolerances are −0,02 mm for the step thickness up to 12,5 mm and −0,1 mm for larger step thicknesses.

d) All external surfaces shall be machined to an *R*a value not greater than 0,8 µm.

e) For step wedge blocks having other dimensions, e.g. steps up to 20 mm, the principles for the design and manufacture of this document shall be applied.

Dimensions in millimetres



Key

1 manufacturer's name or logo
2 International Standard number
3 serial number

Figure 1 — Step wedge calibration block

4.3 Machining, heat treatment and surface finish

A proof for homogeneity of the material and the determination of the sound velocities in perpendicular directions is only possible on a rectangular block.

Additionally, to determine the sound velocities with the required precision, a thickness larger than 25 mm is needed.

Therefore, it is recommended to manufacture a large rectangular block as for calibration block No. 1 according to ISO 2400 as a semi-finished block.

a) The block shall be rough-machined to a dimension of 320 mm × 120 mm × 30 mm before heat treatment which shall consist of:

   1) austenitizing at 920 °C for 30 min;

   2) rapid cooling (quenching) in water;

   3) tempering by heating to 650 °C for 3 h;

   4) cooling in still air.

b) At least 2 mm shall be removed from all surfaces after heat treatment.

c) Prior to final machining, the semi-finished block shall be proven to be free from internal discontinuities.

   1) For this purpose, an ultrasonic test shall be carried out after the heat treatment, with a longitudinal wave probe of at least 10 MHz nominal centre frequency and having a transducer size of 10 mm to 15 mm. The block shall be checked on the basis of all four long faces to cover the complete volume.