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Mekanisk provning av svetsar i metalliska material – Bockprov (ISO 5173:2009)

Destructive tests on welds in metallic materials – Bend tests (ISO 5173:2009)

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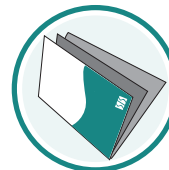
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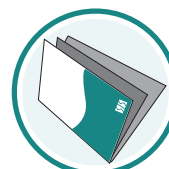
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Denna standard ersätter SS-EN 910, utgåva 1.

The European Standard EN ISO 5173:2010 has the status of a Swedish Standard. This document contains the official English version of EN ISO 5173:2010.

This standard supersedes the Swedish Standard SS-EN 910, edition 1.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 5173

April 2010

ICS 25.160.40

Supersedes EN 910:1996

English Version

Destructive tests on welds in metallic materials - Bend tests (ISO 5173:2009)

Essais destructifs des soudures sur matériaux métalliques -
Essais de pliage (ISO 5173:2009)

Zerstörende Prüfungen von Schweißnähten an
metallischen Werkstoffen - Biegeprüfungen (ISO
5173:2009)

This European Standard was approved by CEN on 18 March 2010.

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Foreword

The text of ISO 5173:2009 has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 5173:2010 by Technical Committee CEN/TC 121 "Welding" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.

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The text of ISO 5173:2009 has been approved by CEN as a EN ISO 5173:2010 without any modification.

Destructive tests on welds in metallic materials — Bend tests

1 Scope

This International Standard specifies a method for making transverse root, face and side bend tests on test specimens taken from butt welds, butt welds with cladding (subdivided into welds in clad plates and clad welds) and cladding without butt welds, in order to assess ductility and/or absence of imperfections on or near the surface of the test specimen. It also gives the dimensions of the test specimen.

In addition, this International Standard specifies a method for making longitudinal root and face bend tests to be used instead of transverse bend tests for heterogeneous assemblies when base materials and/or filler metal have a significant difference in their physical and mechanical properties in relation to bending.

This International Standard applies to metallic materials in all forms of product with welded joints made by any fusion arc welding process.

2 Terms and definitions

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

2.1

transverse face bend test specimen for a butt weld

TFBB

specimen for which the surface in tension is the side that contains the greater width of the weld or the side from which the welding arc was first applied, applicable to transverse butt weld specimens

See Figure 1.

2.2

transverse root bend test specimen for a butt weld

TRBB

specimen for which the surface in tension is the side opposite to that of the face butt weld bend test specimen, applicable to transverse butt weld specimens

See Figure 2.

2.3

transverse side bend test specimen for a butt weld

SBB

specimen for which the surface in tension is a cross-section of the weld

See Figure 3.

2.4

longitudinal face test specimen for a butt weld

root bend test specimen for a butt weld

LFBB

LRBB

specimen whose direction is parallel to butt weld direction, applicable to face and root bend specimens

See Figure 4.

2.5

face bend test specimen for cladding without a butt weld

FBC

specimen for which the cladding is in tension, applicable to both transverse and longitudinal specimens

See Figure 5.

2.6

side bend test specimen for cladding without a butt weld

SBC

specimen for which the cross-section of the cladding overlay is in tension, applicable to both transverse and longitudinal specimens

See Figure 6.

2.7

face bend test specimen for cladding with a butt weld

side bend test specimen for cladding with a butt weld

FBCB

SBCB

specimen for which the cladding is in tension or for which the cross-section of the cladding overlay is in tension and which contains a butt weld

See Figures 7 and 8.

3 Principle

Submitting a test specimen, taken transversely or longitudinally from a welded joint, to plastic deformation by bending it, without reversing the bending direction, in such a way that one of the surfaces or cross-sections of the welded joint is in tension.

Unless otherwise specified, the test shall be carried out at an ambient temperature of $(23 \pm 5) ^\circ\text{C}$.

The test shall be made in accordance with one of the methods described in Clause 6.

4 Symbols and abbreviated terms

4.1 Symbols

See Table 1 and Figures 1 to 15.

4.2 Abbreviated terms

TFBB	Transverse face bend test specimen for a butt weld
TRBB	Transverse root bend test specimen for a butt weld
SBB	Transverse side bend test specimen for a butt weld
LFBB	Longitudinal face bend test specimen for a butt weld
LRBB	Longitudinal root bend test specimen for a butt weld
FBC	Face bend test specimen for cladding without a butt weld
SBC	Side bend test specimen for cladding without a butt weld
FBCB	Face bend test specimen for cladding with a butt weld
SBCB	Side bend test specimen for cladding with a butt weld

Table 1 — Symbols and designations

Symbol	Designation	Unit
A	minimum percentage elongation after fracture required by the material specification	%
b	width of the test specimen	mm
b_1	width of outside fusion line	mm
d	diameter of the former or the inner roller	mm
D	outside diameter of the pipe ^a	mm
l	distance between the rollers	mm
L_f	initial distance between contact of the roller and the centre line of the weld	mm
L_o	original gauge length	mm
L_s	maximum width of the weld after machining	mm
L_t	total length of the test specimen	mm
r	radius of the test specimen edges	mm
R	radius of the rollers	mm
t	thickness of the test piece	mm
t_c	thickness of the cladding	mm
t_s	thickness of the test specimen	mm
t_w	thickness of base material under cladding	mm
α	bending angle	°

^a The term “pipe”, alone or in combination, is used to mean “pipe”, “tube” or “hollow section (without rectangular cross section)”.

4.3 Figures corresponding to the abbreviations

Figures 1 to 8 represent bend test specimens for butt welds and cladding.

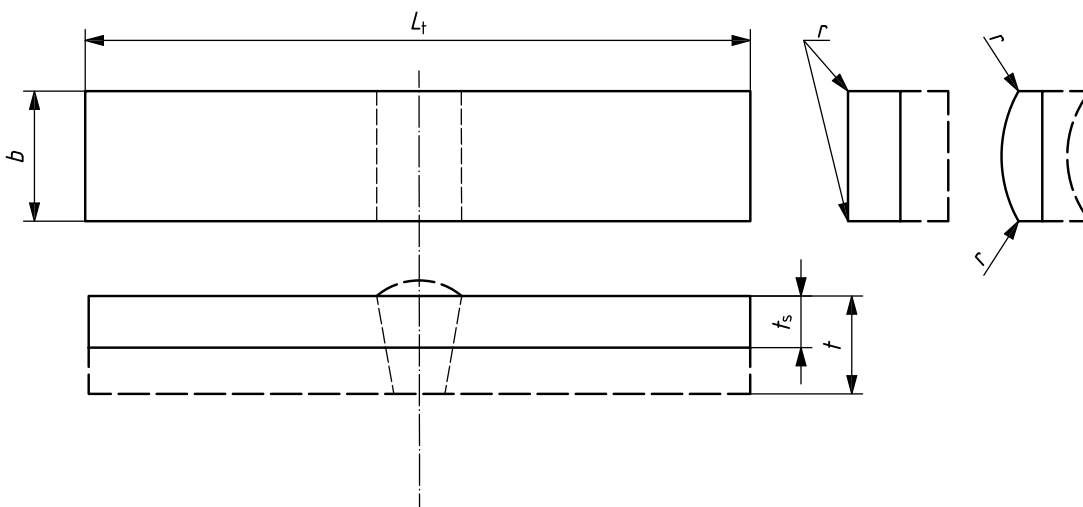


Figure 1 — Transverse face bend test specimen for a butt weld (TFBB)