



SLOVENSKI STANDARD
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Kompenzatorji s kovinskimi mehovi v tlačnih cevovodih

Metal bellows expansion joints for pressure applications

Kompensatoren mit metallischen Bälgen für Druckanwendungen

Compensateurs de dilatation à soufflets métalliques pour appareils à pression

Ta slovenski standard je istoveten z: prEN 14917

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ICS:

23.040.99	Drugi sestavni deli za cevovode	Other pipeline components
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Metal bellows expansion joints for pressure applications

Compensateurs de dilatation à soufflets métalliques
pour appareils à pression

Kompensatoren mit metallischen Bälgen für
Druckanwendungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 342.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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prEN 14917:2020 (E)**European foreword**

This document (prEN 14917:2020) has been prepared by Technical Committee CEN/TC 342 “Metal hoses, hose assemblies, bellows and expansion joints”, the secretariat of which is held by SNV.

This document is currently submitted to the CEN Enquiry.

This document supersedes EN 14917:2009+A1:2012.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

Metal bellows expansion joints are used as components in piping or as parts of pressure vessels.

If an expansion joint is designed and manufactured according to this document, the risk analysis is already undertaken, see Annex I.

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prEN 14917:2020 (E)**1 Scope**

This document specifies the requirements for design, manufacture and installation of metal bellows expansion joints with circular cross section for pressure applications, i.e. maximum allowable pressure greater than 0,5 bar.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 764-4:2014, *Pressure equipment — Part 4: Establishment of technical delivery conditions for metallic materials*

EN 764-5:2014, *Pressure equipment — Part 5: Inspection documentation of metallic materials and compliance with the material specification*

EN 1092-1:2018, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 10028-1:2017, *Flat products made of steels for pressure purposes — Part 1: General requirements*

EN 10028-2:2017, *Flat products made of steels for pressure purposes — Part 2: Non-alloy and alloy steels with specified elevated temperature properties*

EN 10028-3:2017, *Flat products made of steels for pressure purposes — Part 3: Weldable fine grain steels, normalized*

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EN 10028-4:2017, *Flat products made of steels for pressure purposes — Part 4: Nickel alloy steels with specified low temperature properties*

EN 10028-7:2016, *Flat products made of steels for pressure purposes — Part 7: Stainless steels*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 10216-1:2013, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Electric welded and submerged arc welded non-alloy steel tubes with specified room temperature properties*

EN 10216-2:2013, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10216-3:2013, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 3: Electric welded and submerged arc welded alloy fine grain steel tubes*

EN 10216-4:2013, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 4: Non-alloy and alloy steel tubes with specified low temperature properties*

EN 10217-1:2019, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Electric welded and submerged arc welded non-alloy steel tubes with specified room temperature properties*

EN 10217-2:2019, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-3:2019, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 3: Electric welded and submerged arc welded alloy fine grain steel tubes with specified room, elevated and low temperature properties*

EN 10217-4:2019, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 4: Electric welded non-alloy steel tubes with specified low temperature properties*

EN 10217-5:2019, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 5: Submerged arc welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-6:2019, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 6: Submerged arc welded non-alloy steel tubes with specified low temperature properties*

EN 10222-2:2017, *Steel forgings for pressure purposes — Part 2: Ferritic and martensitic steels with specified elevated temperatures properties*

EN 10222-3:2017, *Steel forgings for pressure purposes — Part 3: Nickel steels with specified low temperature properties*

EN 10222-4:2017, *Steel forgings for pressure purposes — Part 4: Weldable fine grain steels with high proof strength*

EN 10253-2:2007, *Butt-welding pipe fittings — Part 2: Non alloy and ferritic alloy steels with specific inspection requirements*

EN 10269:2013, *Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties*

EN 10272:2016, *Stainless steel bars for pressure purposes*

EN 10273:2016, *Hot rolled weldable steel bars for pressure purposes with specified elevated temperature properties*

EN 13184:2001, *Non-destructive testing — Leak testing — Pressure change method*

EN 13445-2:2014, *Unfired pressure vessels — Part 2: Materials*

EN 13445-3:2014, *Unfired pressure vessels — Part 3: Design*

EN 13480-2:2017, *Metallic industrial piping — Part 2: Materials*

EN 13480-2:2017/A1:2018, *Metallic industrial piping — Part 2: Materials*

EN 13480-2:2017/A2:2018, *Metallic industrial piping — Part 2: Materials*

EN 13480-2:2017/A3:2018, *Metallic industrial piping — Part 2: Materials*

EN 13480-3:2017, *Metallic industrial piping — Part 3: Design and calculation*

EN ISO 148-1:2016, *Metallic materials — Charpy pendulum impact test — Part 1: Test method (ISO 148-1:2016)*

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EN ISO 643:2012, *Steels — Micrographic determination of the apparent grain size (ISO 643:2012)*

EN ISO 3651-2:1998, *Determination of resistance to intergranular corrosion of stainless steels — Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in media containing sulfuric acid (ISO 3651-2:1998)*

EN ISO 5817:2014, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2014)*

EN ISO 6506-1:2014, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1:2014)*

EN ISO 6520-1:2007, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding (ISO 6520-1:2007)*

EN ISO 6892-1:2016, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2016)*

EN ISO 6892-2:2018, *Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature (ISO 6892-2:2018)*

EN ISO 9445-1:2010, *Continuously cold-rolled stainless steel — Tolerances on dimensions and form — Part 1: Narrow strip and cut lengths (ISO 9445-1:2009)*

EN ISO 9445-2:2010, *Continuously cold-rolled stainless steel — Tolerances on dimensions and form — Part 2: Wide strip and plate/sheet (ISO 9445-2:2009)*

EN ISO 9606-4:1999, *Approval testing of welders — Fusion welding — Part 4: Nickel and nickel alloys (ISO 9606-4:1999)*

EN ISO 9712:2012, *Non-destructive testing — Qualification and Certification of NDT personnel (ISO 9712:2012)*

EN ISO 15609-1:2004, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding (ISO 15609-1:2004)*

EN ISO 15610:2019, *Specification and qualification of welding procedures for metallic materials — Qualification based on tested welding consumables (ISO 15610:2003)*

EN ISO 15613:2004, *Specification and qualification of welding procedures for metallic materials — Qualification based on pre-production welding test (ISO 15613:2004)*

EN ISO 15614-1:2017, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2017, Corrected version 2017-10-01)*

EN ISO 17635:2016, *Non-destructive testing of welds — General rules for metallic materials (ISO 17635:2016)*

EN ISO 17636-1:2013, *Non-destructive testing of welds — Radiographic testing — Part 1: X- and gamma-ray techniques with film (ISO 17636-1:2013)*

EN ISO 17637:2016, *Non-destructive testing of welds — Visual testing of fusion-welded joints (ISO 17637:2016)*

EN ISO 17638:2016, *Non-destructive testing of welds — Magnetic particle testing (ISO 17638:2016)*

EN ISO 17640:2018, *Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment (ISO 17640:2018)*

EN ISO 20485:2018, *Non-destructive testing — Leak testing — Tracer gas method (ISO 20485:2017)*

EN ISO 23277:2015, *Non-destructive testing of welds — Penetrant testing — Acceptance levels (ISO 23277:2015)*

EN ISO 23278:2015, *Non-destructive testing of welds — Magnetic particle testing — Acceptance levels (ISO 23278:2015)*

EN ISO 23279:2017, *Non-destructive testing of welds — Ultrasonic testing — Characterization of discontinuities in welds (ISO 23279:2017)*

3 Terms and definitions

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

3.1

expansion joint

metal equipment consisting of one or more bellows used to absorb movements such as caused by thermal or mechanical effects in piping or pressure vessels

Note 1 to entry: See also Clause 4 Classification.

3.2

bellows

flexible element consisting of one or more corrugations and the end tangents

3.3

corrugation (convolution)

flexible unit of a bellows with a leakproof wall consisting of one or more plies

3.4

ply

element of the bellows' wall usually made from sheet or strip material

3.5

end tangent

straight un-corrugated portion at the ends of a bellows

3.6

reinforcing collar

reinforcing sleeve or ring attached to the end tangent for reinforcement

3.7

assisting collar

ring placed around the end tangents to facilitate welding