



**SLOVENSKI STANDARD**  
**SIST EN 16668:2025**

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**Nadomešča:**

**SIST EN 16668:2016+A1:2018**

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**Industrijski ventili - Zahteve in preskušanje kovinskih ventilov kot tlačnega pribora**

Industrial valves - Requirements and testing for metallic valves as pressure accessories

Industriearmaturen - Anforderungen und Prüfungen für Metallarmaturen als drucktragende Ausrüstungsteile

Robinetterie industrielle - Exigences et essais pour appareils de robinetterie métalliques utilisés comme accessoires sous pression

**Ta slovenski standard je istoveten z: EN 16668:2025**

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**ICS:**

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## Industrial valves - Requirements and testing for metallic valves as pressure accessories

Robinetterie industrielle - Exigences et essais pour appareils de robinetterie métalliques utilisés comme accessoires sous pression

Industriearmaturen - Anforderungen und Prüfungen für Metallarmaturen als drucktragende Ausrüstungsteile

This European Standard was approved by CEN on 22 December 2024.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## EN 16668:2025 (E)

### European foreword

This document (EN 16668:2025) has been prepared by Technical Committee CEN/TC 69 “Industrial valves”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by August 2025, and conflicting national standards shall be withdrawn at the latest by August 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 16668:2016+A1:2018.

This document includes the following significant technical changes with respect to EN 16668:2016+A1:2018:

- the most important changes have been made in the following clauses and subclauses: Clause 4, 5.1.2, 5.1.3, 5.2.1, 5.2.4, 5.3.1.3, 5.3.1.4, 5.3.1.5, 5.3.1.6, 5.3.3, 5.3.4, 5.8.1, 5.8.2 and Annex A;
- the following tables have been modified: Table 2 and Table E.1;
- Annex ZA has been modified;
- dated references have been updated.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## Introduction

This document is to be understood as an umbrella standard referencing European harmonized standards for industrial metallic valves as pressure accessories for industrial applications. It covers the requirements to meet the Essential Safety Requirements of the Pressure Equipment Directive.

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## EN 16668:2025 (E)

### 1 Scope

This document is applicable to metallic valves as pressure accessories for industrial applications with a maximum allowable pressure PS greater than 0,5 bar in accordance with the European legislation for pressure equipment and specifies requirements applicable to design, manufacture, testing, materials and documentation.

All essential safety requirements of the European legislation for pressure equipment applicable to valves have been taken into consideration and are addressed in this document.

This document does not apply to:

- safety valve and bursting disc (safety accessories),
- sight glass with its frames (component of a pressure equipment), and
- measurement chambers.

For other exclusions, refer to the European legislation for pressure equipment [60].

### 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.

EN 19:2023, *Industrial valves — Marking of metallic valves*

EN 736-1:2018, *Valves — Terminology — Part 1: Definition of types of valves*

EN 764-1:2015+A1:2016, *Pressure equipment — Part 1: Vocabulary*

EN 764-2:2012, *Pressure equipment — Part 2: Quantities, symbols and units*

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 764-7:2002, *Pressure equipment — Part 7: Safety systems for unfired pressure equipment*

EN 1349:2009, *Industrial process control valves*

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

EN 12266-1:2012, *Industrial valves — Testing of metallic valves — Part 1: Pressure tests, test procedures and acceptance criteria — Mandatory requirements*

EN 12266-2:2012, *Industrial valves — Testing of metallic valves — Part 2: Tests, test procedures and acceptance criteria — Supplementary requirements*

EN 12516-1:2014+A1:2018, *Industrial valves — Shell design strength — Part 1: Tabulation method for steel valve shells*



EN 12516-2:2014+A1:2021, *Industrial valves — Shell design strength — Part 2: Calculation method for steel valve shells*

EN 12516-3:2002, *Valves — Shell design strength — Part 3: Experimental method*

EN 12516-4:2014+A1:2018, *Industrial valves — Shell design strength — Part 4: Calculation method for valve shells manufactured in metallic materials other than steel*

EN 13445-2:2021+A1:2023, *Unfired pressure vessels — Part 2: Materials*

EN 13445-4:2021+A1:2023, *Unfired pressure vessels — Part 4: Fabrication*

EN 13445-5:2021+A1:2024, *Unfired pressure vessels — Part 5: Inspection and testing*

EN 13480-2:2024, *Metallic industrial piping — Part 2: Materials*

EN ISO 5817:2023, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2023)*

EN ISO 9606-1:2017, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1:2012 including Cor 1:2012 and Cor 2:2013)*

EN ISO 9606-2:2004, *Qualification test of welders — Fusion welding — Part 2: Aluminium and aluminium alloys (ISO 9606-2:2004)*

EN ISO 9606-3:1999, *Approval testing of welders — Fusion welding — Part 3: Copper and copper alloys (ISO 9606-3:1999)*

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

EN ISO 9606-5:2000, *Approval testing of welders — Fusion welding — Part 5: Titanium and titanium alloys, zirconium and zirconium alloys (ISO 9606-5:2000)*

EN ISO 9712:2022, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712:2021)*

EN ISO 11970:2016, *Specification and qualification of welding procedures for production welding of steel castings (ISO 11970:2016)*

EN ISO 14732:2013, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732:2013)*

EN ISO 15609-1:2019, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding (ISO 15609-1:2019)*

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

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EN ISO 15614-1:2017,<sup>1</sup> *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 15614-2:2005, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2005)*

EN ISO 15614-5:2024, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 5: Arc welding of titanium, zirconium and their alloys (ISO 15614-5:2024)*

EN ISO 15614-6:2006, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 6: Arc and gas welding of copper and its alloys (ISO 15614-6:2006)*

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

**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 736-1:2018, EN 764-1:2015+A1:2016, EN 764-2:2012, EN 764-4:2014, EN 764-5:2014, EN 764-7:2002 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— IEC Electropedia: available at <https://www.electropedia.org/>

— ISO Online browsing platform: available at <https://www.iso.org/obp>

**3.1****valve**

pipng component which influences the fluid flow by opening, closing or partially obstructing the passage of the fluid flow or by diverting or mixing the fluid flow

Note 1 to entry: Typical valves are gate valves, globe valves, control valves, check valves, diaphragm valves, butterfly valves, plug and ball valves as well as non-standard valves either manual or actuator operated and steam traps, usually covered by a product standard.

[SOURCE: EN 736-1:2018, 3.1, modified — The Note 1 to entry was added here.]

**3.2****production welding**

welding carried out during manufacturing before final delivery to the purchaser including joint welding and finishing welding

**3.2.1****joint welding**

welding used to weld components in order to obtain an integral unit

<sup>1</sup> As impacted by EN ISO 15614-1:2017/A1:2019.

**3.2.2****finishing welding**

production welding carried out in order to ensure the agreed quality of the casting

[SOURCE: EN ISO 11970:2016, 3.1.2]

**3.3****repair welding**

welding carried out after delivery to the end user, i.e. after the casting has been in service

[SOURCE: EN ISO 11970:2016, 3.2]

**3.4****sample**

set of one or more units taken from a batch and intended to provide information on the batch

Note 1 to entry: This definition is based on ISO 2859-1.

**3.5****material manufacturer**

person or organization (like founder, forge-, welding shop) which provides material to the responsible valve manufacturer

**4 Category of valves**

A classification under the use of DN and PS and fluid groups 1 and 2 leads to maximum Category III. A method of classification of valves is provided in Annex A.

Valves classified in Article 4 (3) of the European legislation for pressure equipment shall be designed, manufactured and tested in accordance with the “sound engineering practice” requirement of a member state and are excluded from conformance to the requirements of this document except 5.6, 5.8.1 and 5.8.2.

NOTE Valves complying with the requirements of the relevant product standard are considered to comply with the “sound engineering practice” requirement.

**5 Requirements****5.1 Design****5.1.1 General**

Valves shall meet the design requirements of this document.

NOTE Annex D contains a summary of European harmonized standards for valves.

A hazard analysis shall be conducted for the intended use and for the reasonably foreseeable conditions.

It is recommended to have this hazard analysis documented.

If hazards are identified which apply to the valve, appropriate measures in order to reduce or eliminate the hazard identified shall be taken into account.

**EN 16668:2025 (E)****5.1.2 Shell design strength**

**5.1.2.1** The shell design strength shall be determined by one or more of the following standards:

- a) for steel valves designed by the tabulation method: according to EN 12516-1:2014+A1:2018;
- b) for steel valves designed by calculation solely: according to EN 12516-2:2014+A1:2021;
- c) for copper alloy, aluminium and cast iron valves: according to EN 12516-4:2014+A1:2018;
- d) an experimental method provided that sole use of an experimental method is only permitted when the maximum allowable pressure at room temperature, PS, multiplied by the DN-number is less than 3 000 bar: according to EN 12516-3:2002. This standard is used to supplement the tabulation method a), and the calculation method b) without limit.

The valve obturator normally is not part of the shell – except if an “end of line service” is agreed. In this case, all requirements related to the European legislation for pressure equipment apply to the obturator as well.

**5.1.2.2** Appropriate calculation methods other than those specified in the relevant European harmonized standards giving same level of safety may be applied.

**5.1.3 Protection against exceeding the allowable limits**

A means to protect against excessive pressure increase in isolated cavities shall be provided when the analysis of hazards and risks identifies this as a risk.

Some valves trap fluid inside cavities that become isolated during service. When this occurs, an increase in temperature could result in an excessive rise in pressure and the allowable limits being exceeded.

**5.2 Materials****5.2.1 General requirements**

Shell materials shall be selected in accordance with EN 12516-1:2014+A1:2018, EN 12516-4:2014+A1:2018 or EN 13445-2:2021+A1:2023.

NOTE Other metallic shell materials can be used providing they are covered by an EAM or PMA.

The inspection documents of material shall be in accordance with EN 764-5:2014.

EAM or PMA is not required for valves classified in Article 4 (3) of the European legislation for pressure equipment.

**5.2.2 European harmonized material standards**

A summary of European Harmonized Material Standards for shell parts is given in Annex B.

**5.2.3 European approval of materials (EAM)**

EAM for materials are intended for repeated use. They are established in accordance with EN 764-4:2014 and apply to materials or treatment condition and product forms or dimensions not covered in a European Harmonized Standard.

Annex C contains a link to OJEU Website for European approval of materials (EAM).