SLOVENSKI STANDARD
SIST EN 1759-4:2004

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Prirobnice in prirobnični spoji – Okrogle prirobnice za cevi, ventile, fitinge in dodatke z oznako Class – 4. del: Prirobnice iz aluminijevih zlitin

Flanges and their joint - Circular flanges for pipes, valves, fittings and accessories, class designated - Part 4: Aluminium alloy flanges

Flansche und ihre Verbindungen - Runde Flansche für Rohre, Armaturen, Formstücke und Zubehörteile, nach Class bezeichnet - Teil 4: Flansche aus Aluminiumlegierungen

Brides et leurs assemblages - Brides circulaires pour tubes, appareils de robinetterie, raccords et accessoires, désignées Class - Partie 4: Brides en alliages d'aluminium

Ta slovenski standard je istoveten z: **EN 1759-4:2003**

ICS:

23.040.60	Prirobnice, oglavki in spojni elementi	Flanges, couplings and joints
77.150.10	Aluminijski izdelki	Aluminium products

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This European Standard was approved by CEN on 10 July 2003.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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Foreword

This document (EN 1759-4:2003) has been prepared by Technical Committee CEN/TC74 "Flanges and their joints" 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of an identical text or by endorsement, at the latest by March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of the Pressure Equipment Directive (PED)[1)].

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

EN 1759 consists of the following parts:

— Part 1: Steel flanges (draft stage);

— Part 3: Copper alloy flanges (draft stage);

— Part 4: Aluminium alloy flanges.

The mating dimensions of the flanges of this standard are compatible with those flanges of other materials in accordance with the other parts of EN 1759 and with those flanges of ISO 7005.

Annexes A and B are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1) Directive 97/23 EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the Laws of the Member States concerning pressure equipment; OIEC L 181.

1 Scope

This European standard specifies requirements for Class designated circular flanges for pipes, valves, fittings and accessories made from aluminium alloy in the range of DN 15 to DN 600 (NPS 1/2 to NPS 24) and Class 150 to Class 300 (see Table 1).

This standard specifies the types of flanges and their facings, dimensions and tolerances, bolt sizes, surface finish of jointing faces, marking and materials together with associated pressure temperature (p/T) ratings.

The flanges are intended to be used for piping as well as for pressure vessels.

2 Normative references

This European Standard incorporates, by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 1515-1, *Flanges and their joints — Bolting — Part 1: Selection of bolting.*

EN 12392, *Aluminium and aluminium alloys — Wrought products — Special requirements for products intended for the production of pressure equipment.*

EN 12560, *Flanges and their joints - Gaskets for Class designated flanges (in different parts)*

EN ISO 4287:1998, *Geometrical product specification (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997).*

EN ISO 6708:1995, *Pipework Components — Definition and selection of DN (nominal size) (ISO 6708: 1995).*

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply:

3.1
DN
see EN ISO 6708:1995

3.2
NPS (Nominal pipe size)
An alphanumeric designation of size for components of a pipework system, which is used for reference purposes. It comprises, for the purpose of Class designated flanges according to this standard, the letters NPS followed by a dimensionless number which is indirectly related to the physical size of the bore or outside diameter of the end connections.

NOTE 1 The number following the letters NPS does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

NOTE 2 The relationship between DN and NPS is given in the tables.

3.3
Class
An alphanumeric designation used for reference purposes related to a combination of mechanical and dimensional characteristics of a component of a pipework system. It comprises the word Class followed by a dimensionless whole number.

NOTE 1 The number following the word Class does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

NOTE 2 The designation Class is not meaningful unless it is related to the relevant component standard number.

NOTE 3 It is intended that all components with the same Class and NPS designations shall have the same mating dimensions for compatible flange types.

3.4
R*a*, R*z*
see EN ISO 4287:1998

3.5
Maximum allowable pressure, PS
PS means the maximum pressure for which the equipment is designed, as specified by the equipment manufacturer.

3.6
Maximum allowable temperature, TS
TS means the maximum temperature for which the equipment is designed, as specified by the equipment manufacturer.

4 Designations

4.1 Range of nominal sizes

The range of DN (NPS) applicable to each Class shall be as given in Table 1.

4.2 Range of Class designations

The range of Class designations shall be as given in Table 1.

4.3 Types of flanges

Figure 1 illustrates flanges identified according to type:

a) Type 05 Blank flange;

b) Type 11 Weld-neck flange.

4.4 Designation of flanges

The designation of the flanges shall contain the following information:

a) Description (Flange);

b) Number of this standard (EN 1759-4);

c) Flange type (11, 05 resp.);

d) Flange facing type (e.g. C);

e) DN or NPS (e.g. DN 300);

f) For type 11 flanges only, neck diameter, *A* and neck thickness, *S* (e.g. 324 x 5);

g) Class (e.g. Class 150);

h) Material (e.g. EN AW-5083-O).

EXAMPLE 1 For a type 11 flange:

Flange EN 1759-4 - 11 - C - DN 300 - 324 x 5 - Class 150 - EN AW-5083-O

EXAMPLE 2 For a type 05 flange:

Flange EN 1759-4 - 05 - C - DN 300 - Class 150 - EN AW-5083-O

5 General requirements

5.1 Flange materials

Flanges shall be manufactured from the material grades EN AW-5083 (AlMg4,5Mn0,7) -O or EN AW-6061 (AlMg1SiCu) -T6 according to EN 12392. Other materials may be used. For the p/T ratings see 5.5.

Weld-neck flanges shall be forged or made from extruded bars; blank flanges shall be forged or made from plate.

5.2 Repairs

Repair welding of the flanges is not permitted.

5.3 Bolting

5.3.1 The bolting shall be chosen according to the pressure, temperature and gasket.

5.3.2 Bolting materials shall be selected according to the following criteria:

a) For all service conditions in accordance with EN 1515-1 (bolt/nut): 5.6/5, 8.8/8, 25Ni-15Cr-Ti/25Ni-15Cr-Ti, A4-70/A4-70, A2-70/A2-70, 18Cr-9Ni-Mo-AT+C/18Cr-9Ni-Mo, 18Cr-9Ni-AT+C/18Cr-9Ni;

b) for less severe service conditions e. g. water service or in case of oversized flanged joints, in accordance with EN 1515-1 (bolt/nut): A4-50/A4-50, A2-50/A2-50, 18Cr-9Ni-Mo-/18Cr-9Ni-Mo, 18Cr-9Ni/18Cr-9Ni;

NOTE The choice of this bolting should be based on either special experience or on recalculations.

c) where bolting other than specified in EN 1515-1 is required this shall be chosen according to the parameters above so that the flanged joint remains tight under the expected operating conditions.

5.3.3 The use of washers is recommended.

5.4 Gaskets

Gaskets shall be selected from the relevant part of EN 12560.

NOTE If spiral wound gaskets are selected, then they should be low stress design (y = 5000, m = 3 for calculation in accordance with ASME Code).

5.5 Pressure/temperature (p/T) ratings

The pressure temperature ratings (p/T ratings) for the material grades in 5.1 are given in Table 7.

5.6 Dimensions

5.6.1 Dimensions of flanges shall be in accordance with the following figures and tables:

- Class 150 flanges: Figure 3 and Table 4;
- Class 300 flanges: Figure 4 and Table 5.

NOTE 1 Approximate masses of flanges are given in annex A.

NOTE 2 Figures 3 and 4 are identical. They are repeated for better handling of the standard.

5.6.2 Bolt holes shall be equally spaced on the pitch circle diameter.

5.6.3 If neck thickness *S* is ordered smaller than given in tables 4 and 5, the inside diameter at the neck shall be tapered at an angle of 14 ° to 18 °. If *S* is ordered greater, the bore diameter shall be $A - 2 \times S$.

5.6.4 For flanges made of EN AW-6061 (AlMg1SiCu) -T6 the neck thickness S shall be sufficient to take account of lower strength properties due to welding.

5.7 Flange facings

5.7.1 Types of jointing faces

For the types of jointing faces see Figure 2, for the dimensions of jointing faces see Table 2.

5.7.2 Jointing face finish

All jointing faces shall be machine finished and, when compared by visual or tactile means with reference specimens, shall be in accordance with Table 3.

NOTE 1 It is not intended that instrument measurements are taken on the jointing faces.

NOTE 2 Other finishes may be agreed between the manufacturer and purchaser.

For jointing face type B1, turning shall be carried out with a round-nosed tool in accordance with Table 3.

5.8 Spot facing and back facing of flanges

Any spot facing and back facing required shall not reduce the flange thickness to less than the thickness specified. When spot facing is used, the diameter shall be large enough to accommodate the outside diameter of the equivalent normal series of washers for the bolt size being fitted. When a flange is back faced, it is permissible for the fillet radius to be reduced but it shall not be eliminated entirely.

5.9 Tolerances

Tolerances on dimensions are as specified in Table 6.

5.10 Marking

All flanges shall be marked as follows:

a) Flange manufacturer's name or trade-mark (e.g. xxx);

b) Number of this standard (EN 1759-4);

c) DN or NPS (e.g. DN 300);

d) Class (e.g. Class 150);

e) Neck thickness if not standard (e.g. 7,1);

f) Material designation (e.g. EN AW-5083-O);

g) Batch number or suitable quality control number traceable to the batch number when test certification is required (e.g. yyy).