



SLOVENSKI STANDARD

SIST EN 4816:2017

01-oktober-2017

Aeronavtika - Prirobnične spojke - Robna tesnila z nikljevo zlitino - Tehnična specifikacija - Palčne mere

Aerospace series - Flange couplings - Gasket seal with nickel alloy C seal - Technical specification - Inch series

Luft- und Raumfahrt - Rohrverschraubung mit Flanschen - Flachdichtung aus Nickellegierung mit Armierung - Technische Lieferbedingung - Inch-Reihe

Série aérospatiale - Raccordement à bride - Joint plaque avec joint C en alliage de nickel - Spécification technique - Série en inches

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Ta slovenski standard je istoveten z: EN 4816:2017

ICS:

23.040.60	Prirobnice, oglavki in spojni elementi	Flanges, couplings and joints
49.080	Letalski in vesoljski hidravlični sistemi in deli	Aerospace fluid systems and components

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EUROPEAN STANDARD

EN 4816

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2017

ICS 49.080

English Version

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This European Standard was approved by CEN on 7 November 2016.

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Contents

	Page
European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
3.1 Pressure	5
3.2 Coupling and assembling	5
3.3 Surface defects	6
3.4 Quality assurance	6
4 Requirements, inspection and test methods	7
4.1 Test conditions and preparation of specimens for qualification	7
4.1.1 Tests fluids	7
4.1.2 Pipe junction	7
4.1.3 Assembling	7
4.1.4 Pressurizing	7
4.1.5 Ageing	8
4.1.6 Pressurizing	8
5 Quality assurance	9
5.1 Product qualification	9
5.2 Quality control records	10
5.3 Acceptance conditions	10
5.4 Rejection	11
5.5 Purchaser's (user's) quality control	11
6 Preparation for delivery	11
6.1 Cleaning	11
6.2 Preservation and packaging	11
7 Storage	12
Annex A (normative) Test assembly for ageing and pressure testing	13
Annex B (normative) Inspection during assembly	14
Annex C (normative) Ageing and pressurizing tests	15

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European foreword

This document (EN 4816:2017) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 November 2017 and conflicting national standards shall be withdrawn at the latest by November 2017.

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.

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

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EN 4816:2017 (E)**1 Scope**

This standard specifies the required characteristics, inspection and test methods, quality assurance and procurement requirements for inch series, gasket seal with C seal in nickel alloy, for temperature ranges from type II to type V according to ISO 6771 and nominal pressure up to 10 500 kPa (class B according to ISO 6771).

In addition to the requirements of this technical specification, the coupling assemblies shall be qualified in accordance with equipment or component specification requirements.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2951, *Aerospace series — Metallic materials — Test method — Micrographic determination of content of non-metallic inclusions*¹⁾

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

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

ISO 468, *Surface roughness — Parameters, their values and general rules for specifying requirements*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 6771, *Aerospace — Fluid systems and components — Pressure and temperature classifications*

ISO 8625-1, *Aerospace — Fluid systems — Vocabulary — Part 1: General terms and definitions related to pressure*

TR 2674, *Aerospace series — Design and construction of pipeline for fluids in liquid or gaseous condition — Rigid lines, installation*²⁾

TR 4815, *Aerospace series — Flange couplings up to 21 000 kPa — Design standard — Inch series*²⁾

MIL-PRF-23699, *Lubricating oil, aircraft turbine engine, synthetic base, NATO code numbers: 0-152, 0-154, 0-156, and 0-157*³⁾

3 Terms and definitions

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

¹⁾ Published as ASD-STAN Prestandard at the date of publication of this standard. (<http://www.asd-stan.org/>)

²⁾ Published as ASD-STAN Technical Report at the date of publication of this standard. (<http://www.asd-stan.org/>)

³⁾ Published by: DoD National (US) Mil. Department of Defense. (<http://www.defenselink.mil/>)

3.1 Pressure

Nominal pressure, proof pressure, impulse pressure, burst pressure according to ISO 8625-1.

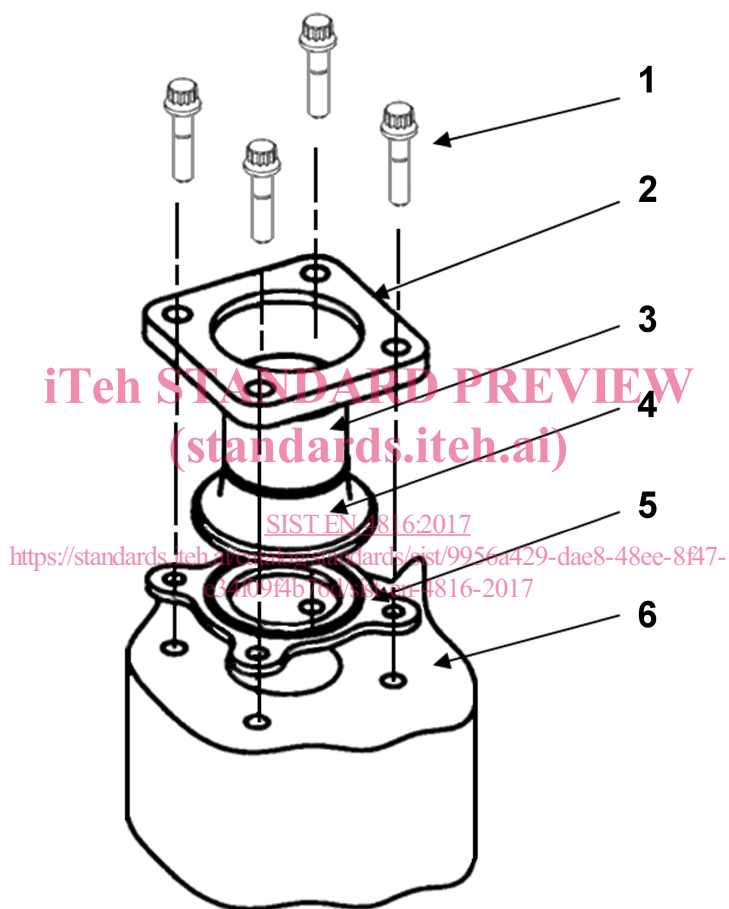
Maximum operating pressure depends on the seal use in the assembly.

3.2 Coupling and assembling

3.2.1

coupling assembly

assembled ferrule, loose flange, bolts and pipe mating with e. g. equipment (see Figure 1)



Key

- 1 Bolts
- 2 Swivel flange
- 3 Tube
- 4 Coupling
- 5 Seal
- 6 Port connection on case or equipment

Figure 1 — Example of coupling assembly

3.2.2

dimensional code

is composed with the nominal diameter given in 16th of inches within two (2) digit and additional digit when necessary to describe the size of a fluid system component and other configuration options

EN 4816:2017 (E)**3.3 Surface defects****3.3.1****surface irregularity**

nonconformity with general surface appearance, possible defect

3.3.2**crack**

clean (crystalline) fracture passing through or across the grain boundaries that possibly follows inclusions of foreign elements

Note 1 to entry: Cracks are normally caused by overstressing the metal during forging or other forming operations, or during heat treatment.

Note 2 to entry: Where parts are subject to significant reheating, cracks are usually discoloured by scale.

3.3.3**fold**

doubling over of metal, which can occur during the forging operation

Note 1 to entry: Folds can occur at or near the intersection of diameter changes and are especially prevalent with non-circular necks, shoulders and heads.

3.3.4**lap**

fold-like machining defect

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3.3.5**seam**

(1) usually a surface opening or crack resulting from a defect obtained during casting or forging

(2) extraneous material, stringer in the material, which is not homogeneous with base metal

3.3.6**pit**

void or hole in the surface as caused, for example, by corrosion

3.4 Quality assurance**3.4.1****production batch**

definite quantity of some commodity or service produced at one time under conditions that are presumed uniform

3.4.2**delivery batch**

batch consisting of couplings with the same identity block which may come from different production batches

3.4.3**acceptable quality level****AQL**

when a continuing series of lots is considered, a quality level which for the purposes of sampling inspection is the limit of a satisfactory process average

3.4.4

qualification

testing required to demonstrate successful performance of the coupling assembly in simulated service (overload, destructive and fatigue tests)

3.4.5

major defect

defect other than critical, that is likely to result in a failure or to reduce materially the usability of the considered product for its intended purpose

3.4.6

minor defect

defect that is not likely to reduce materially the usability of the considered product for its intended purpose, or that is a departure from established specification having little bearing on the effective use or operation of this product

4 Requirements, inspection and test methods

See Table 1.

The couplings shown on Figure 1 of this standard are for information only. The test specimens shall be assembled with the part to test (e. g. elbow fitting instead of straight fitting) and its associated components in accordance with TR 4815.

4.1 Test conditions and preparation of specimens for qualification

4.1.1 Tests fluids

Unless otherwise specified, tests shall be carried out using e. g. oil compatible with the test temperature range. Water may be used, whenever practical, for pressure testing.

4.1.2 Pipe junction

The method of joining the pipe to the coupling (brazing, welding, mechanical attachment, etc.) shall not be detrimental to the properties, strength or geometry of the pipe assembly. The joint shall be in accordance with the design instructions and shall be inspected by direct measurement, X-ray or other non-destructive methods.

4.1.3 Assembling

Installations of the coupling shall be in accordance with TR 2674 and TR 4815.

The coupling shall be fitted with nickel alloy double hexagonal head bolt with the relevant bolt size.

Unless otherwise specified, the bolt shall be lubricated if necessary prior the assembling with engine oil (e. g. according to MIL-PRF-23699) on the thread and at the interface between the nut and the ferrule. Either bolt or mating threaded part shall have coated on thread.

A torque value comprised between the minimum and the maximum given in Table 2 plus locking torque value shall be apply to each bolt without any special sequence in the torque tightening.

4.1.4 Pressurizing

Nominal pressure (PN); Proof pressure (PE) and Burst pressure (PR) are given in Table 3 for current tube material and thickness able to with and minimum burst pressure required for such pipe assembly.