SLOVENSKI STANDARD
SIST EN 4814:2017

01-julij-2017

Aeronavtika - Prirobnične spojke do 21 000 kPa - Tehnična specifikacija - Colska izvedba

Aerospace series - Flange couplings up to 21 000 kPa - Technical specification - Inch series

Luft- und Raumfahrt - Rohrverschraubung mit Flanschen bis 21 000 kPa - Technische Lieferbedingung - Inch-Reihe

Série aérospatiale - Raccordement à bride Jusqu'à 21 000 kPa - Spécification technique - Série en inches

Ta slovenski standard je istoveten z: **EN 4814:2017**

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

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ICS 49.080

English Version

Aerospace series - Flange couplings up to 21 000 kPa - Technical specification - Inch series

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

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European foreword

This document (EN 4814:2017) 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of an identical text or by endorsement, at the latest by November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

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1 Scope

This standard specifies the required characteristics, inspection and test methods, quality assurance and procurement requirements for inch series, pipe couplings, swivel flanges, for temperature ranges from type II to type V according to ISO 6771 and nominal pressure up to 21 000 kPa (class D 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 2685, *Aircraft — Environmental test procedure for airborne equipment — Resistance to fire in designated fire zones*

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 6772, *Aerospace — Fluid systems — Impulse testing of hydraulic hose, tubing and fitting assemblies*

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: O-152, O-154, O-156, and O-167*[3)]

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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 Terms and definitions

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

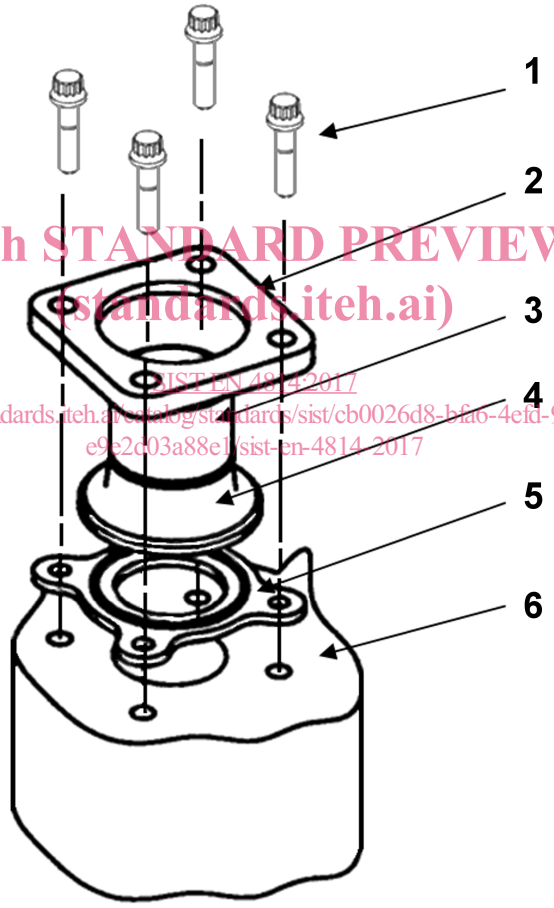
3.1 Pressure

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 with optional inserts. May be replaced by another flange coupling with nuts.

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

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

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.

Qualification tests given from 4.12 to 4.14 shall only be made when required. Complementary qualification tests may be determined in direct relation with the application (e. g. vibration test, thermal shock test).

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 proof, burst, stress corrosion and re-use capability 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.