SLOVENSKI STANDARD
oSIST prEN 3645-002:2022

01-september-2022

Aeronavtika - Konektorji, električni, okrogli, zaščiten kontakt, hitra spojka z navojem, stalna delovna temperatura 175 °C ali 200 °C - 002. del: Specifikacija lastnosti in razporeditev kontaktov

Aerospace series - Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous - Part 002: Specification of performance and contact arrangements

Luft- und Raumfahrt - Elektrische Rundsteckverbinder, kontaktgeschützt, dreigängige Gewinde-Schnellkupplung, Betriebstemperatur 175 °C oder 200 °C konstant - Teil 002: Leistungsdaten und Kontaktanordnungen

Série aérospatiale - Connecteurs électriques circulaires, à contacts protégés, à accouplement par filetage, à pas rapide à trois filets, température d'utilisation 175 °C ou 200 °C continu - Partie 002 : Spécification de performances et arrangements des contacts

Ta slovenski standard je istoveten z: **prEN 3645-002**

ICS:

31.220.10	Vtiči in vtičnice, konektorji	Plug-and-socket devices. Connectors
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 49.060

Will supersede EN 3645-002:2015

English Version

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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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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European foreword

This document (prEN 3645-002:2022) 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 document 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 3645-002:2015.

Introduction

This family of connectors is derived from MIL-DTL-38999/30C series III, with which it is intermateable and interchangeable.

1 Scope

This document defines the performances and contact arrangements for threaded ring coupling circular connectors, fire resistant or non-fire resistant, intended for use in a temperature range from −65 °C to 175 °C or 200 °C continuous.

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 2591-209, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 209: Current temperature derating*

EN 3197,[1] *Aerospace series — Design and installation of aircraft electrical and optical interconnection systems*

EN 3645,[*] *Aerospace series — Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous*

EN 3660-002, *Aerospace series — Cable outlet accessories for circular and rectangular electrical and optical connectors — Part 002: Index of product standards*

EN 4529-002, *Aerospace series — Elements of electrical and optical connection — Sealing plugs — Part 002: Index of product standards*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 3645 apply.

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

- ISO Online browsing platform: available at https://www.iso.org/obp
- IEC Electropedia: available at https://www.electropedia.org/

4 Description and codification of class

See Table 1.

[1] Published as ASD-STAN Standard at the date of publication of this document by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), https://www.asd-stan.org/.

[*] All parts quoted in this document.

Table 1

Model		Description
Connector	W	Receptacles and plugs, cadmium-plated aluminium alloy, olive drab — 500 h salt spray — Plug with grounding spring — Crimp, removable contacts — Maximum operating temperature 175 °C continuous
	J	Receptacles and plugs, cadmium-plated composite, olive drab — 2 000 h salt spray — Plug with grounding spring — Crimp, removable contacts — 1 500 matings — Maximum operating temperature 175 °C continuous
	V	Receptacles and plugs, zinc-nickel plated composite, non reflective dark — with Zero hexavalent chromium compounds (see Table 2 list) added by any actor of the Supply Chain or used in the manufacturing process. — The coating shall consist of a zinc nickel alloy that has a minimum of 12 and maximum 20 mass percent nickel, the balance being zinc — 2 000 h salt spray — Plug with grounding spring — Crimp, removable contacts — 1 500 matings — Maximum operating temperature 175 °C continuous
Connector	Z	Receptacles and plugs, zinc-nickel plated aluminium alloy, non-reflective dark — with zero hexavalent chromium compounds (see Table 2 list) added by any actor of the supply chain or used in the manufacturing process — The coating shall consist of a zinc nickel alloy that has a minimum of 12 and maximum 20 mass percent nickel, the balance being zinc — 500 h salt spray — Plug with grounding spring — Crimp, removable contacts — Maximum operating temperature 175 °C continuous
	K	Receptacles and plugs, passivated stainless steel — 500 h salt spray — Plug with grounding spring — Fire-resistant — Crimp, removable contacts — Maximum operating temperature 200 °C continuous
	F	Receptacles and plugs, nickel-plated aluminium alloy — 48 h salt spray — Plug with grounding spring — Crimp, removable contacts — Maximum operating temperature 200 °C continuous
	M	Receptacles and plugs, nickel-plated composite — 2 000 h salt spray — Plug with grounding spring — Crimp, removable contacts — 1 500 matings — Maximum operating temperature 200 °C continuous
	Y	Hermetic receptacle, passivated stainless steel — Solder contacts — Maximum operating temperature 200 °C continuous
	T	Receptacles and plugs, nickel fluorocarbon polymer plated aluminium alloy, non-reflective — 500 h salt spray — Plug with grounding spring — Crimp, removable contacts — Maximum operating temperature 175 °C continuous

Model		Description
Protective cover	**K**	Protective cover for plug in passivated corrosion resisting steel — Maximum operating temperature 200 °C continuous
	F	Protective cover for receptacle or plug in nickel-plated aluminium alloy — Maximum operating temperature 200 °C continuous
	Z	Protective cover for receptacle or plug, zinc-nickel plated aluminium alloy, non-reflective dark — with zero hexavalent chromium compounds (see Table 2 list) added by any actor of the supply chain or used in the manufacturing process — The coating shall consist of a zinc nickel alloy that has a minimum of 12 and maximum 20 mass percent nickel, the balance being zinc — Maximum operating temperature 175 °C continuous
	W	Protective cover for receptacle or plug in olive-green cadmium-plated aluminium alloy — Maximum operating temperature 175 °C continuous
	T	Protective cover for receptacle or plug in nickel fluorocarbon polymer plated aluminium alloy, non-reflective — Maximum operating temperature 175 °C continuous
Dummy receptacle	**K**	Dummy receptacle in passivated stainless steel — Maximum operating temperature 200 °C continuous
	F	Dummy receptacle in nickel-plated aluminium alloy — Maximum operating temperature 200 °C continuous
Dummy receptacle	**Z**	Dummy receptacle, zinc-nickel plated aluminium alloy, non-reflective dark — with zero hexavalent chromium compounds (see Table 2 list) added by any actor of the supply chain or used in the manufacturing process — The coating shall consist of a zinc nickel alloy that has a minimum of 12 and maximum 20 mass percent nickel, the balance being zinc — Maximum operating temperature 175 °C continuous
	W	Dummy receptacle in olive-green cadmium-plated aluminium alloy — Maximum operating temperature 175 °C continuous
	T	Dummy receptacle in nickel fluorocarbon polymer plated aluminium alloy, non-reflective — Maximum operating temperature 175 °C continuous

Table 2 — Hexavalent chromium compound list

Substance name	CAS number
Acids generated from chromium trioxide and their oligomers. Names of the acids and their oligomers: chromic acid, dichromic acid, oligomers of chromic acid and dichromic acid.	7738–95–5 13530–68–2
Chromium trioxide	1333–82–0
Potassium dichromate	7778–50–9
Sodium chromate	7775–11–3
Sodium dichromate	7789–12–0 10588–01–9
Dichromium tris(chromate)	24613–89–6
Pentazinc chromate octahydroxide	49663–84–5
Potassium hydroxyoctaoxodizincatedichromate	11103–86–9
Strontium chromate	7789–06–2

5 Operating conditions

5.1 Combinations of plugs and receptacles

Table 3 shows the combinations marked by (X) which achieve the characteristics specified for each model.

For other combinations, the characteristics of the pair of connectors are those of the component with the lowest performance.

Other combinations may be used subject to the approval of the design authority.

Table 3

Receptacle model	Plug model							
	W	F	J	V	M	K	Z	T
W	X	—	X	X	—	—	X	—
F	—	X	—	—	X	—	—	—
J	X	—	X	X	—	—	X	—
V	X	—	X	X	—	—	X	—
M	—	X	—	—	X	—	—	—
Y	—	—	—	—	X	X	—	—
K	—	—	—	—	—	X	—	—
Z	X	—	X	X	—	—	X	—
T	—	—	—	—	—	—	—	X

5.2 Combinations of protective covers and connectors

See Table 4.

Table 4

Flight cap for receptacle	Receptacle model	Dummy receptacle Flight cap for plug	Plug model
W	J/V	W	J/V
	W		W
	Z		Z
F	M	F	M
	F		F
K	Y	K	K
	K		
Z	Z	Z	Z
	W/J/V		W/J/V
T	T	T	T

5.3 Permissible cables

The sealing performance of these connectors is achieved with the cables of dimensions given in Table 5, using the accessories wiring tools specified.

Table 5

Dimensions are in millimetres

Contact size	Outer diameters of cables	
	min.	max.
22	0,75	1,37
20	1,01	2,11
16	1,65	2,77
12	2,47	3,61
10	3,42	5,21
8	a	a

a The cables for size 8 contacts are specified in the contact product standard.

NOTE The use of cables exceeding the maximum diameter indicated is prohibited. Cables smaller than the minimum diameter can be used, subject to a concession, provided that the requirements of EN 3197 are observed.

5.4 Operating characteristics

5.4.1 Electrical conditions

5.4.1.1 Withstand voltage

See Table 6.

Table 6

Pressure	Rating M		Rating N		Rating I		Rating II	
	Mated V_{rms}	Unmated V_{rms}	Mated V_{rms}	Unmated V_{rms}	Mated V_{rms}	Unmated V_{rms}	Mated V_{rms}	Unmated V_{rms}
Sea level	1 300	1 300	1 000	1 000	1 800	1 800	2 300	2 300
12,1 kPa (15 000 m)	800	550	600	400	1 000	600	1 000	800
4,7 kPa (21 000 m)	800	350	600	260	1 000	400	1 000	500
1,1 kPa (30 000 m)	800	200	600	200	1 000	200	1 000	200

5.4.1.2 Insulation resistance

At ambient temperature, the insulation resistance shall be ≥ 5 000 MΩ.

5.4.1.3 Maximum permissible current

The maximum current is shown in Table 7.

The heating caused by passage of the current shall not cause the maximum temperature to be exceeded.