SLOVENSKI STANDARD
SIST EN 3645-002:2009

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Aeronavtika - Konektorji, elektriļ ni, okrogli, zaġļ iteni kontakt, hitra spojka z navojem, stalna delovna temperatura med 175 ĆC in 200 ĆC - 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 accouplement par filetage, à pas rapide à trois filets, température d'utilisation 175 °C ou 200 °C continu - Partie 002 : Spécification de performances et arrange-ments des contacts

Ta slovenski standard je istoveten z: EN 3645-002:2007

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49.060	Letalska in vesoljska elektriļ na oprema in sistemi	Aerospace electric equipment and systems

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This European Standard was approved by CEN on 30 September 2005.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 3645-002:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

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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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

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

1 Scope

This standard 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 referenced documents are indispensable for the application 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 3155-002, *Aerospace series — Electrical contacts used in elements of connection — Part 002: List and utilization of contacts*

EN 3155-008, *Aerospace series — Electrical contacts used in elements of connection — Part 008: Contacts, electrical, male, type A, crimp, class S — Product standard*

EN 3155-009, *Aerospace series — Electrical contacts used in elements of connection — Part 009: Contacts, electrical, female, type A, crimp, class S — Product standard*

EN 3155-010, *Aerospace series — Electrical contacts used in elements of connection — Part 010: Contacts, electrical, triaxial, size 8, male, type D, crimp, class R — Product standard* [1)]

EN 3155-011, *Aerospace series — Electrical contacts used in elements of connection — Part 011: Contacts, electrical, triaxial, size 8, female, type D, crimp, class R — Product standard* [1)]

EN 3155-012, *Aerospace series — Electrical contacts used in elements of connection — Part 012: Contacts, electrical, triaxial, size 8, male, type D, solder, class R — Product standard*

EN 3155-013, *Aerospace series — Electrical contacts used in elements of connection — Part 013: Contacts, electrical, triaxial, size 8, female, type D, solder, class R — Product standard*

EN 3155-024, *Aerospace series — Electrical contacts used in elements of connection — Part 024: Contacts, electrical, triaxial, size 8, male, type D, crimp, class S — Product standard*

EN 3155-025, Aerospace series — Electrical contacts used in elements of connection — Part 025: Contacts, electrical, triaxial, size 8, female, type D, crimp, class S — Product standard

EN 3197, *Aerospace series — Installation of aircraft electrical and optical interconnection systems*

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

EN 3645-001, Aerospace series — Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous — Part 001: Technical specification

EN 3660-002, *Aerospace series — Cable outlet accessories for circular and rectangular electrical and optical connectors — Part 002: Index of product standards* [2)]

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1) In preparation at the date of publication of this standard.

2) Published as ASD Prestandard at the date of publication of this standard.

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

DOD-C-38999/30A, *Connectors, elec., cir. miniature, high density, quick disconnect (bayonet, threaded, and breech coupling), environ. resistant, removable crimp and hermetic solder contacts, plug, lanyard release, fail-safe, triple start threaded coupling, removable crimp contacts sockets, ser. III, metric*[3)]

MIL-C-39029/106A, *Contacts, electrical connector, socket, crimp removable, (for MIL-C-38999 series I, III and IV and MIL-C-29600 series A connectors)* [3)]

MIL-C-39029/107A, *Contacts, electrical connector, pin, crimp removable, (for MIL-C-38999 Series I, III and IV and MIL-C-29600 series A connectors)* [3)]

3 Description and codification of class

See Table 1.

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
	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
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
	W	Protective cover for receptacle or plug in olive-green cadmium-plated aluminium alloy — 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
	W	Dummy receptacle in olive-green cadmium-plated aluminium alloy — Maximum operating temperature 175 °C continuous

3) Published by: Department of Defense (DOD), the Pentagon, Washington, DC 20301, USA.

4 Definitions

See EN 3645-001.

5 Operating conditions

5.1 Combinations of plugs and receptacles

Table 2 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 2

Receptacle model	Plug model				
	W	**F**	**J**	**M**	**K**
W	X	—	X	—	—
F	—	X	—	X	—
J	X	—	X	—	—
M	—	X	—	X	—
Y	—	—	—	X	X
K	—	—	—	—	X

5.2 Combinations of protective covers and connectors

See Table 3.

Table 3

Flight cap for receptacle	Receptacle model	Dummy receptacle Flight cap for plug	Plug model
W	J W	W	J W
F	M F	F	M F
K	Y K	K	K

5.3 Permissible cables

The sealing performance of these connectors is achieved with the cables of dimensions given in Table 4, using the accessories wiring tools specified.

See Table 4.

Table 4

Contact size	Outer diameters of cables mm	
	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 may 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 5.

Table 5

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 6.

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

Test EN 2591-209 shall be taken into account.

Table 6 — Test current in the contacts for hermetic connectors as a function of the cables

Size		Cable size		Current A
Contact	Barrel	AECMA code	AWG Code[a]	Hermetic connector
22	22	004 002 001	22 24 26	3 3 2
20	20	006 004 002	20 22 24	5 5 3
16	16	012 010 006	16 18 20	10 10 7,5
12	12	030 020	12 14	17 10
10	10	050 030	10 12	—

[a] AWG = American Wire Gage.

5.4.1.4 Housing electrical continuity

See Table 7.

Table 7

Model	Maximum resistance mΩ
F	1
W	2,5
Model Y with plug Models F, W	10
J and M	3
K	10

5.4.1.5 Shielding effectiveness from 100 MHz to 1 GHz

See Table 8.

Table 8

Frequency MHz	Minimum attenuation db	
	Models F, J, M and W	Model K
100	90	90
200	88	85
300	88	73
400	87	71
800	85	66
1 000	85	65

5.4.1.6 Transfer impedance

To be defined.

5.4.2 Climatic conditions

Operating temperatures:

— minimum temperature: – 65 °C;

— maximum temperature: see Table 1. Furthermore, the connector operating temperature shall be limited to the maximum operating temperature indicated in the product standards for contacts;

Corrosion resistance and fluid resistance: see EN 3645-001.

5.4.3 Mechanical conditions

Mechanical endurance:

— 1 500 cycles for models J and M;
— 500 cycles for all other models;
— 250 cycles for type 1 lanyard release plug.

6 Type codes

See Table 9.

Table 9

Product	Type	Model	EN 3645-	Description
Connector	0	W; F; K; J; M	003	Wall-mount receptacle
		Y	004	Receptacle, hermetic, square flange mounting
	1	Y	005	Receptacle, hermetic, round flange, brazing mounting
	6	W; F; K; J; M	008	Non release plug with grounding ring
	7	W; F; K; J; M	009	Receptacle, round flange, jam nut mounting
		Y	010	Receptacle, hermetic, round flange, jam nut mounting
	8	W; F	011	Lanyard release plug with grounding fingers — Type 1
	9	W	012	Lanyard release plug with grounding fingers — Type 2
Protective cover	3	F; W; K	006	Protective cover for receptacle
	4	K; F; W	007	Protective cover for plug
Dummy receptacle	5	K; F; W	013	Dummy receptacle

7 Polarization

See Table 10.

Table 10

Polarization position	09	11	13	15	17	18	21	23	25
N	a	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a	a
B	a	a	a	a	a	a	a	a	a
C	a	a	a	a	a	a	a	a	a
D	a	a	a	a	a	a	a	a	a
E	a	a	a	a	a	a	a	a	a

[a] Available.