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BSI Standards Publication

Aerospace series — Electrical contacts used in elements of connection

Part 082: Contacts, electrical, female, type A, crimp, class S — Product standard

National foreword

This British Standard is the UK implementation of EN 3155-082:2015.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Série aérospatiale - Contacts électriques utilisés dans les organes de connexion - Partie 082 : Contacts électriques, femelles, type A, à sertir, classe S - Norme de produit

Luft- und Raumfahrt - Elektrische Kontakte zur Verwendung in Verbindungselementen - Teil 082: Elektrische Buchsenkontakte, Typ A, crimpbar, Klasse S - Produktnorm

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 3155-082:2015) 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of an identical text or by endorsement, at the latest by April 2016, and conflicting national standards shall be withdrawn at the latest by April 2016.

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Introduction

The contacts defined by this standard are derived from those of SAE-AS39029/57 and, intermateable with those of SAE-AS39029/58.

1 Scope

This European Standard specifies the required characteristics, tests and tooling applicable to female electrical contacts 082, type A, crimp, class S used in elements of connection according to EN 3155-002.

It shall be used together with EN 3155-001.

The associated male contacts are defined in EN 3155-008 and EN 3155-070.

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 2083, *Aerospace series — Copper and copper alloy conductors for electrical cables — Product standard*

EN 2591 [1)], *Aerospace series — Elements of electrical and optical connection — Test methods*

EN 3155-001, *Aerospace series — Electrical contacts used in elements of connection — Part 001: Technical specification*

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 3155-070, *Aerospace series — Electrical contacts used in elements of connection — Part 070: Contacts, electrical, male, type A, crimp, class S — Product standard*

EN 4434, *Aerospace series — Copper or copper alloy lightweight conductors for electrical cables — Product standard (Normal and tight tolerances)*

ISO 8843, *Aircraft — Crimp-removable contacts for electrical connectors — Identification system*

SAE-AS22520, *Crimping tools, wire termination, general specification for* [2)]

1) All parts quoted in Table 7.

2) Published by: SAE National (US) Society of Automotive Engineers http://www.sae.org/

SAE-AS39029, *Contacts, electrical connector, general specification for* [2)]

SAE-AS39029/57, *Contacts, Electrical Connectors, Socket Crimp Removable (For MIL-DTL-24308, MIL-DTL-38999 Series II, MIL-DTL-55302/68, /71, /72, /75 and MIL-DTL-83733 Connectors)* [2)]

SAE-AS39029/58, *Contacts, Electrical Connector, Pin, Crimp Removable (For MIL-DTL-24308, MIL-DTL-38999 Series I, II, III, and IV, and MIL-DTL-55302/69 and MIL-DTL- 83733 Connectors)* [2)]

SAE-AS81969, *Installing and removal tools, connector electrical contact, general specification for* [2)]

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 3155-001 apply.

4 Required characteristics

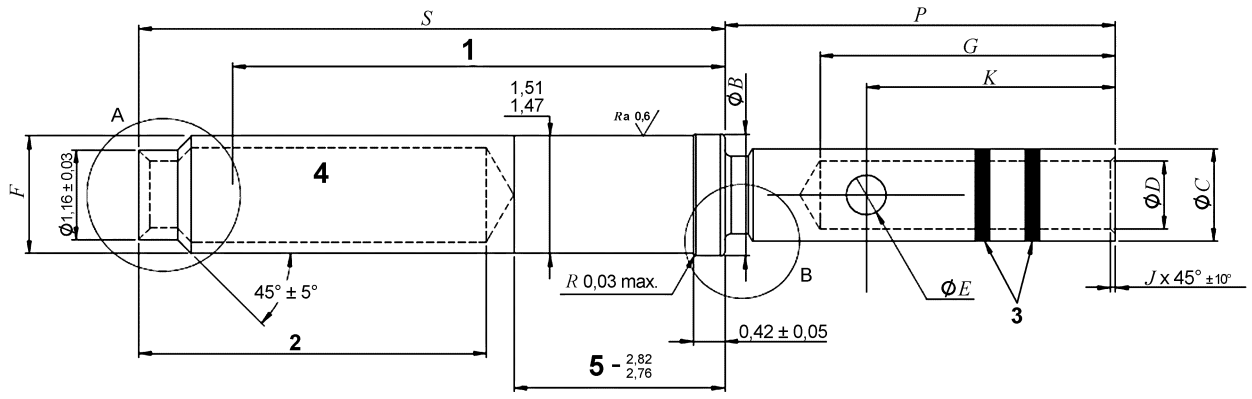
4.1 Specific characteristics

Type A contacts are for general application and class S corresponds to an operating temperature range from – 65 °C to 200 °C.

4.2 Dimensions and mass

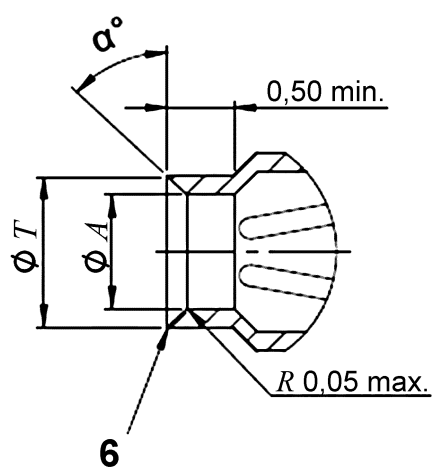
See Figure 1 to Figure 3, and Table 1.

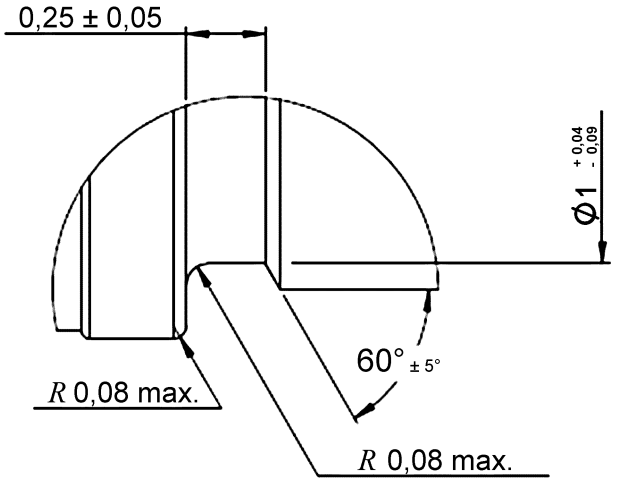
Dimensions and tolerances are given in millimetres and apply after surface treatment.



◎ ∅ 0,10	∅ General concentricity	◎ ∅ 0,05	∅ *A* and ∅ *C*

Figure 1 — Connector contact





Key

1 6,30 min., see NOTE 1
2 4,20 min., see NOTE 2
3 Colour bands, see Table 2
4 Manufacturer identification
5 Peripherical conductive zone
6 R = 0,2 min. or full radius

NOTE 1 Point at which a square ended gauge pin of the same diameter as the mating contact first engages the female contact spring member.

NOTE 2 This dimension represents both the length of the bore ∅ 0,90 max. which includes the active zone of protection (see EN 3155-001).

Figure 2 — Detail A

Figure 3 — Detail B

Table 1 — Connector contact

Size		*A*	*B*	*C*	*D*	*E*	*F*	*G*	*J*	*K*	*P*	*S*	*T*	α	**Mass** g
Contact	**Barrel**												min.		max.
22	22	0,89 0,79	1,57 1,52	1,22 1,17	0,90 0,85	0,56 0,46	1,57 1,22	3,99 3,58	0,13 0,07	3,28 3,10	6,02 5,87	7,67 7,42	1,12	50 44	0,15

4.3 Marking by colour code

See Table 2.

Table 2 — Marking

Size		Two bands according to ISO 8843	
Contact	**Barrel**	**① Band 1**	**② Band 2**
22	22	Green	Green

4.4 Material, surface treatment

— Body material: copper alloy

— Surface treatment: gold an appropriate undercoat also comprising for peripherical conductive zone, thickness of protection not specified, selective protection permitted.

4.5 Permissible cables

See Table 3.

Table 3 — Permissible cables

Size		Size of conductors			Rated test current A
Contact	**Barrel**	**ASD code**	**Section** mm²	**AWG** [a]	
22	22	004	0,40	22	5
		002	0,25	24	3
		001	0,15	26	2

[a] AWG = Closest American Wire Gage.

4.6 Tooling

4.6.1 Crimping tools

Conform to SAE-AS22520, see Table 4.

The qualification selector numbers used for crimping copper or copper alloy conductors in cables EN 2083 and EN 4434 are indicated in Table 4.

It is the responsibility of the user if the parameters in Table 4, Table 5 and Table 6 are changed for service use.

Table 4 — Crimping tools

Contact		Cable size		Tool M22520/1-01		Tool M22520/2-01		Tool M22520/7-01	
Contact size	Barrel size	ASD code	AWG [a]	Positioner	Selector number	Positioner	Selector number	Positioner	Selector number
22	22	001	26	Not applicable	–	M22520/2-06	2	M22520/7-06	1
		002	24		–		3		2
		004	22		–		4		3

[a] AWG = Closest American Wire Gage.

4.6.2 Insertion/Extraction tool

Conform to SAE-AS81969.

See Table 5.

Table 5 — Insertion/Extraction tool

Size		Insertion tools	Extraction tools	
Contact	Barrel		Wired contact	Unwired contact
22	22	M81969/14-01	M81969/14-01	M81969/30-08

4.7 Cable stripping

See Table 6.

Table 6 — Cable stripping

Size		Stripped length of cable mm ± 0,5
Contact	Barrel	
22	22	4

4.8 Tests

Tests according to EN 2591-100, see Table 7.

Table 7 — Test reference

EN 2591-	Designation of the test	Not applicable	Applicable	
			According to EN 3155-001	Remarks
101	Visual examination		X	
102	Examination of dimensions and mass		X	See 4.2.
201	Contact resistance - low level		X	– between pin and socket according EN 3155-001 – between two contacts installed in shunted module according EN 4165: Rc ≤ 8 mΩ initial Rc ≤ 12 mΩ after test
202	Contact resistance at rated current		X	– between pin and socket according EN 3155-001 – between two contacts installed in shunted module according EN 4165: Rc ≤ 8 mΩ initial Rc ≤ 12 mΩ after test
204	Discontinuity of contacts in the microsecond range		X	1µs
206	Measurement of insulation resistance	X		
207	Voltage proof test	X		
208	Temperature rise due to rated current		X	– between two contacts installed in shunted module according EN 4165: I = 5 A; ΔT ≤ 40 °C
210	Electrical overload		X	
220	Contact/conductor joint ageing by current and temperature cycling	X		
301	Endurance at temperature		X	T = (200 ± 2) °C Duration: 1 000 h
305	Rapid change of temperature		X	T_A = (200 ± 2) °C T_B = (– 65 ± 2) °C Contact fitted in shunted module according EN 4165
307	Salt mist		X	
315	Fluid resistance	X		
319	Gastightness of solder less wrapped connections	X		

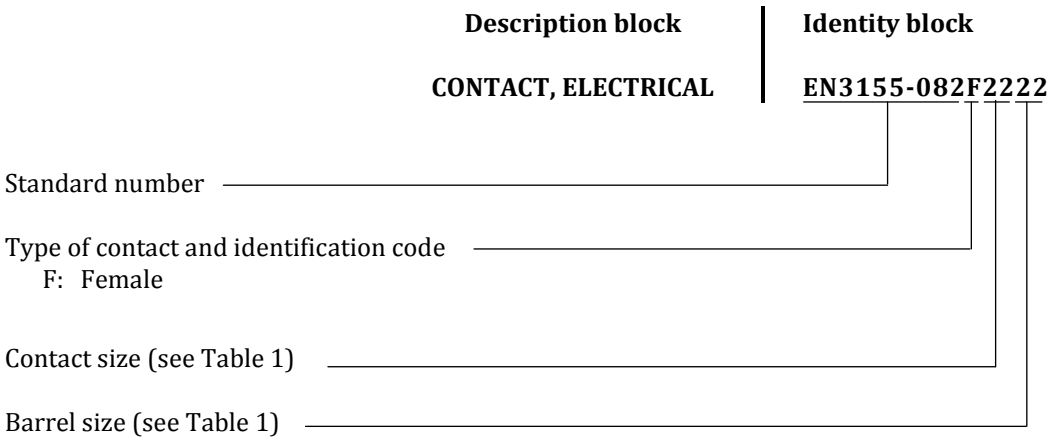
EN 2591-	Designation of the test	Not applicable	Applicable	
			According to EN 3155-001	Remarks
402	Shock		X	Contact fitted in shunted module according EN 4165
403	Sinusoidal and random vibration		X	Contact fitted in shunted module according EN 4165 Same mounting configuration as EN 2591-402 Connectors mated Method A Frequency range: 5 Hz to 3 000 Hz Acceleration: 20 g 1 octave per minute Duration: 4 h /axe Final measurements: EN 2591-204 Method B Figure 2 and Table 1, level E Duration: 1 h/axe Final measurements: EN 2591-204
406	Mechanical endurance		X	
415	Test probe damage (female contacts)		X	
416	Contact bending strength	X		
417	Tensile strength (crimped connection)		X	
418	Gauge insertion/extraction forces (female contacts)		X	
424	Stripping force, solder less wrapped connections	X		
425	Unwrapping capability, solderless wrapped connections	X		
501	Soft solderability	X		
502	Restricted entry		X	
503	Contact deformation after crimping		X	
507	Plating porosity		X	
508	Measurement of thickness of coating on contacts		X	The measured thickness shall be recorded
509	Adhesion of coating on contacts		X	
513	Magnetic permeability		X	≤ 2
514	Solderability of contacts with self-contained solder and flux	X		

4.9 Gauges

See EN 3155-001.

5 Designation

EXAMPLE



NOTE If necessary, the code I9005 shall be placed between the description block and the identity block.

6 Marking

See EN 3155-001.

7 Technical specification

See EN 3155-001.

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