BRITISH STANDARD

BS EN
3155-014:2006

Aerospace series — Electrical contacts used in elements of connection —

Part 014: Contacts, electrical, male, type A, crimp, class S — Product standard

The European Standard EN 3155-014:2006 has the status of a British Standard

ICS 49.060

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National foreword

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A list of organizations represented on ACE/6/-/3 can be obtained on request to its secretary.

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Luft- und Raumfahrt - Elektrische Kontakte zur Verwendung in Verbindungselementen - Teil 014: Elektrische Stiftkontakte, Typ A, crimpbar, Klasse S - Produktnorm

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Foreword

This document (EN 3155-014:2006) 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of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

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Introduction

The contacts defined by this standard are derived from those of SAE-AS39029/64 and, intermateable with those of SAE-AS39029/63. They are specified as a 200 °C class instead of 125 °C class as detailed in the MIL standard.

1 Scope

This standard specifies the required characteristics, tests and tooling applicable to male electrical contacts 014, 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 female contacts are defined in EN 3155-015.

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.

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

EN 2083, *Aerospace series — Copper or copper alloy conductors for electrical cables — Product standard.*

EN 2591-*, *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.* 1)

EN 3155-002, *Aerospace series — Electrical contacts used in elements of connection — Part 002: List and utilization of contacts.*

EN 3155-015, *Aerospace series — Electrical contacts used in elements of connection — Part 015: Contacts, electrical, female, type A, crimp, class S — Product standard.*

MIL-DTL-22520, *Crimping tools, terminal, hand or power actuated, wire termination, and tool kits general specification for.* 2)

MIL-I-81969, *Installing and removal tools, connector electrical contact, general specification for.* 2)

SAE-AS39029, *Contacts, electrical connector, general specification for.* 3)

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* All its parts quoted in Table 7.

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

2) Published by: Department of Defense (DOD), the Pentagon, Washington D.C. 20301 USA.

3) Published by: Society of Automotive Engineering (SAE), 400 Commonwealth Drive, Warrendale, PA 15096, USA.

SAE-AS39029/63, *Contacts, electrical connector, socket, crimp removable (for MIL-C-24308 connectors).* [3)]

SAE-AS39029/64, *Contacts, electrical connector, pin, crimp removable (for MIL-C-24308 connectors).* [3)]

3 Terms and definitions

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

4 Required characteristics

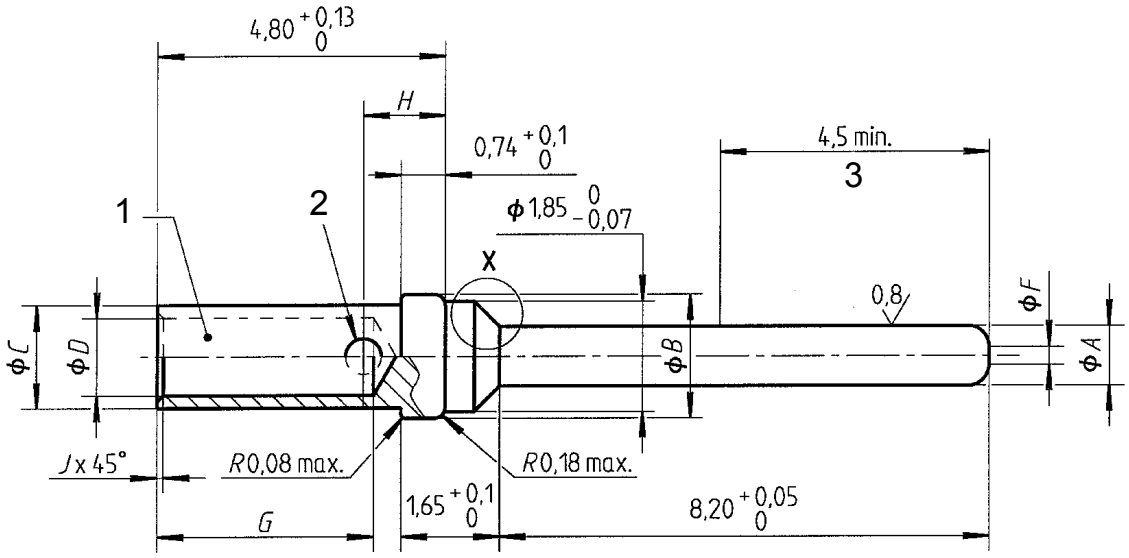
4.1 Specific characteristics

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 Figures 1, 2, 3 and 4 and Table 1.

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



◎	∅ 010	Diameter general concentricity	∅ 0,025	∅ *C* and ∅ *D*

Key

1 Colour bands, see Table 2.
2 ∅ *E* (one side only).
3 Contact active area protection

Figure 1

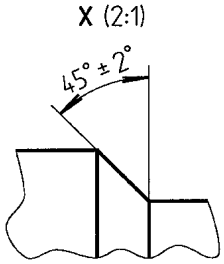


Figure 2

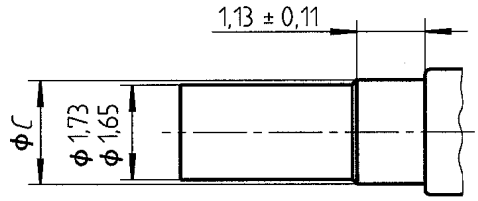
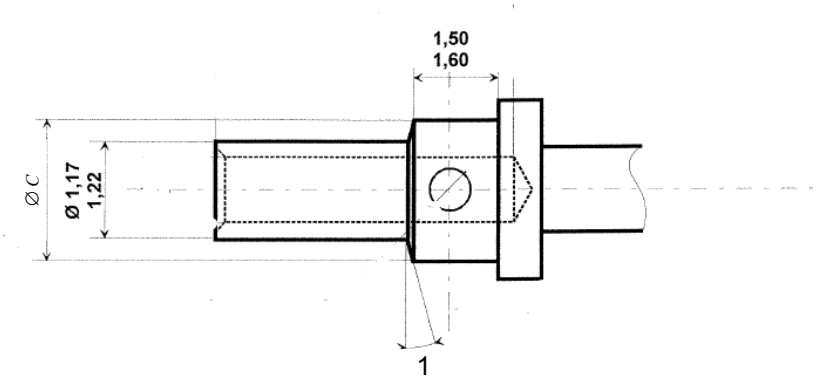


Figure 3 — Barrel 20-20



Key

1 14° to 16°

Figure 4 — Barrel 20-22

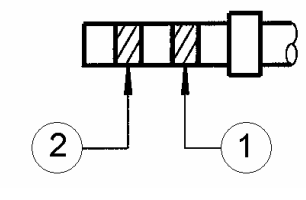
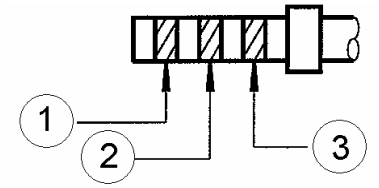
Table 1

Size		*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*K*	**Mass**
Contact	**Barrel**						max.				g max.
20	22	1,04 0,99	2,16 2,08	1,80 1,73	0,90 0,85	0,85 0,60	0,30	4,70 3,60	1,40 1,24	0,15 0,10	0,15
20	20	1,04 0,99	2,16 2,08	1,80 1,73	1,17 1,09	0,85 0,60	0,30	4,70 3,60	1,40 1,24	0,15 0,10	0,15
20	18	1,04 0,99	2,16 2,08	1,80 1,73	1,35 1,30	0,85 0,60	0,30	4,70 3,60	1,40 1,24	0,15 0,10	0,15

4.3 Marking by colour code

See Table 2.

Table 2

Size		Two bands according to ISO 8843		Three bands according to SAE-AS39029/64 [a]		
						
Contact	**Barrel**	① **Band 1**	② **Band 2**	① **Band 1**	② **Band 2**	③ **Band 3**
20	22	Red	Green	–	–	–
20	20	Red	Red	Orange	Blue	White
20	18	Red	Brown [b]	–	–	–

[a] Contacts supplied with three colour bands must conform to this EN standard.

[b] Violet colour band not to be used for new manufacture.

4.4 Material and surface treatment

— Body material: copper alloy

— Surface treatment: gold on an appropriate undercoat, selective protection permitted, thickness of protection not specified.

4.5 Permissible cables

See Table 3.

Table 3

Size		Size of conductors			Rated test current A
Contact	**Barrel**	**AECMA Code**	**Section** mm^2	**AWG** [a]	
20	22	004 002 001	0,40 0,25 0,15	22 24 26	5,0 3,0 2,0
20	20	006 004 002	0,60 0,40 0,25	20 22 24	7,5 5,0 3,0
20	18	010 006 004 002	1,00 0,60 0,40 0,25	18 20 22 24	7,5 7,5 5,0 3,0

[a] AWG = Closest American Wire Gage.

4.6 Tooling

4.6.1 Crimping tools

Conform to MIL-DTL-22520.

See Table 4.

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

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

Table 4

Contact		Cable size		Tools M22520/1-01		Tools M22520/2-01		Tools M22520/7-01	
Contact size	Barrel size	AECMA code	AWG[a]	Positioner	Selector number	Positioner	Selector number	Positioner	Selector number
20	22	001	26	Not applicable	–	M22520/2-08	2	EN4008-006	1
		002	24		–		3		2
		004	22		–		4		3
		–	–		–		–		–
20	20	002	24	Not applicable	–	M22520/2-08	5	EN4008-006	4
		004	22		–		6		5
		006	20		–		7		6
		–	–		–		–		–
20	18	002	24	Not applicable	–	M22520/2-08	5	EN4008-006	4
		004	22		–		6		5
		006	20		–		7		6
		010	18		–		7		6

[a] AWG = Closest American Wire Gage.

4.6.2 Insertion/Extraction tools

Conform to MIL-I-81969.

See Table 5.

Table 5

Size		Insertion tools	Extraction tools	
Contact	Barrel		Wired contact	Unwired contact
20	22	M81969/39-01 M81969/1-02	M81969/39-01 M81969/1-02	M81969/30-11
20	20	M81969/39-01 M81969/1-02	M81969/39-01 M81969/1-02	M81969/30-11
20	18	M81969/39-01 M81969/1-02	M81969/39-01 M81969/1-02	M81969/30-11

4.7 Cable stripping

See Table 6.

Table 6

Size		Stripped length of cable mm ± 0,5
Contact	**Barrel**	
20	22	4
20	20	5
20	18	5

4.8 Tests

See Table 7.

Table 7

EN 2591-	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	
202	Contact resistance at rated current		X	
204	Discontinuity of contacts in the microsecond range		X	
210	Electrical overload		X	
220	Contact/conductor joint ageing by current and temperature cycling	X		
301	Endurance at temperature		X	$T = (200 \pm 2)$ °C Duration: 1 000 h
305	Rapid change of temperature		X	$T_A = (200 \pm 2)$ °C $T_B = (-65 \pm 2)$ °C
307	Salt mist		X	
315	Fluid resistance	X		
319	Gas tightness of solderless wrapped connections	X		
402	Shock		X	Method B: severity 50
403	Sinusoidal and random vibration		X	Method A, Figure 1, 20 g (level 2) Duration: 4 h per axis Ambient temperature

continued

Table 7 *(concluded)*

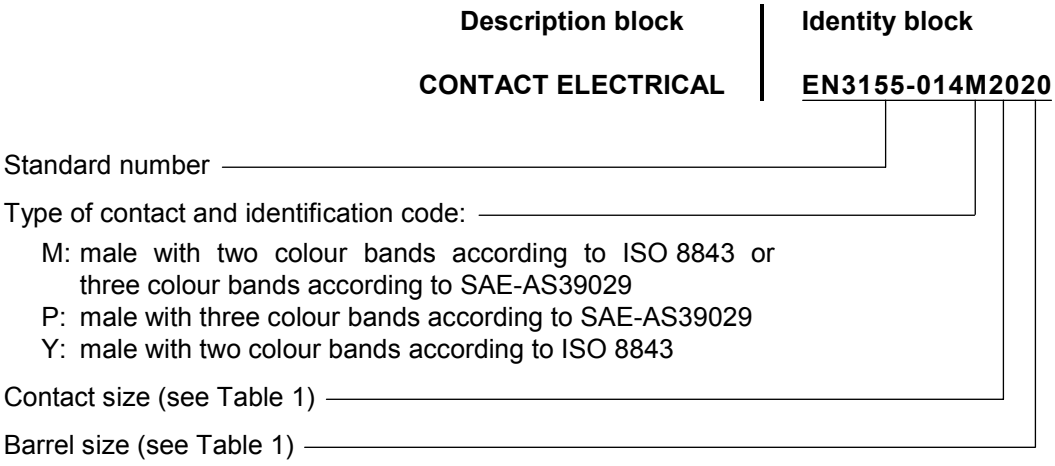
EN 2591-	Test	Not applicable	Applicable	
			According to EN 3155-001	Remarks
406	Mechanical endurance		X	
415	Test probe damage (female contacts)	X		
416	Contact bending strength	X		
417	Tensile strength (crimped connection)		X	
418	Gauge insertion/extraction forces (female contacts)	X		
424	Stripping force, solderless 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

Not applicable

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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