BRITISH STANDARD

BS EN
3155-075:2009

Aerospace series — Electrical contacts used in elements of connection

Part 075: Contacts, electrical, quadrax, size 8, female, type E, crimp, class R — Product standard

ICS 49.060

BSI
British Standards

National foreword

This British Standard is the UK implementation of EN 3155-075:2009.

The UK participation in its preparation was entrusted to Technical Committee ACE/6, Aerospace avionic electrical and fibre optic technology.

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

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2009

ISBN 978 0 580 58167 0

Amendments/corrigenda issued since publication

Date	Comments

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 3155-075

March 2009

ICS 49.060

English Version

Aerospace series - Electrical contacts used in elements of connection - Part 075: Contacts, electrical, quadrax, size 8, female, type E, crimp, class R - Product standard

Série aérospatiale - Contacts électriques utilisés dans les organes de connexion - Partie 075 : Contacts, électriques quadrax, taille 8, femelles, type E, à sertir, classe R - Norme de produit

Luft- und Raumfahrt - Elektrische Kontakte zur Verwendung in Verbindungselementen - Teil 075: Elektrische Quadrax Buchsenkontakte Größe 8, Typ E, crimpbar, Klasse R - Produktnorm

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Ref. No. EN 3155-075:2009: E

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Foreword

This document (EN 3155-075:2009) 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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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Introduction

The contacts defined by this standard are designed for size 8 polarized connector cavities.

1 Scope

This standard specifies the required characteristics, tests and tooling applicable to female electrical quadrax contacts, shielded, size 8, type E, crimp, class R, 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 3155-074.

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 2591-100*, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 100: General.*

EN 3155-001:2009, *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 3155-074, *Aerospace series — Electrical contacts used in elements of connection — Part 074: Contacts, electrical, quadrax, size 8, male, type E, crimp, class R — Product standard.*

EN 3909, *Aerospace series — Test fluids and test methods for electric components and sub-assemblies.*

EN 4530-002, *Aerospace series — Sealing sleeves used in elements of connection — Part 002: List and utilization of sealing sleeves.*

TR 6058, *Aerospace series — Cable code identification list.*[1)]

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 3155-001:2009 apply.

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* All parts quoted in this document.

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

4 Required characteristics

4.1 Specific characteristics

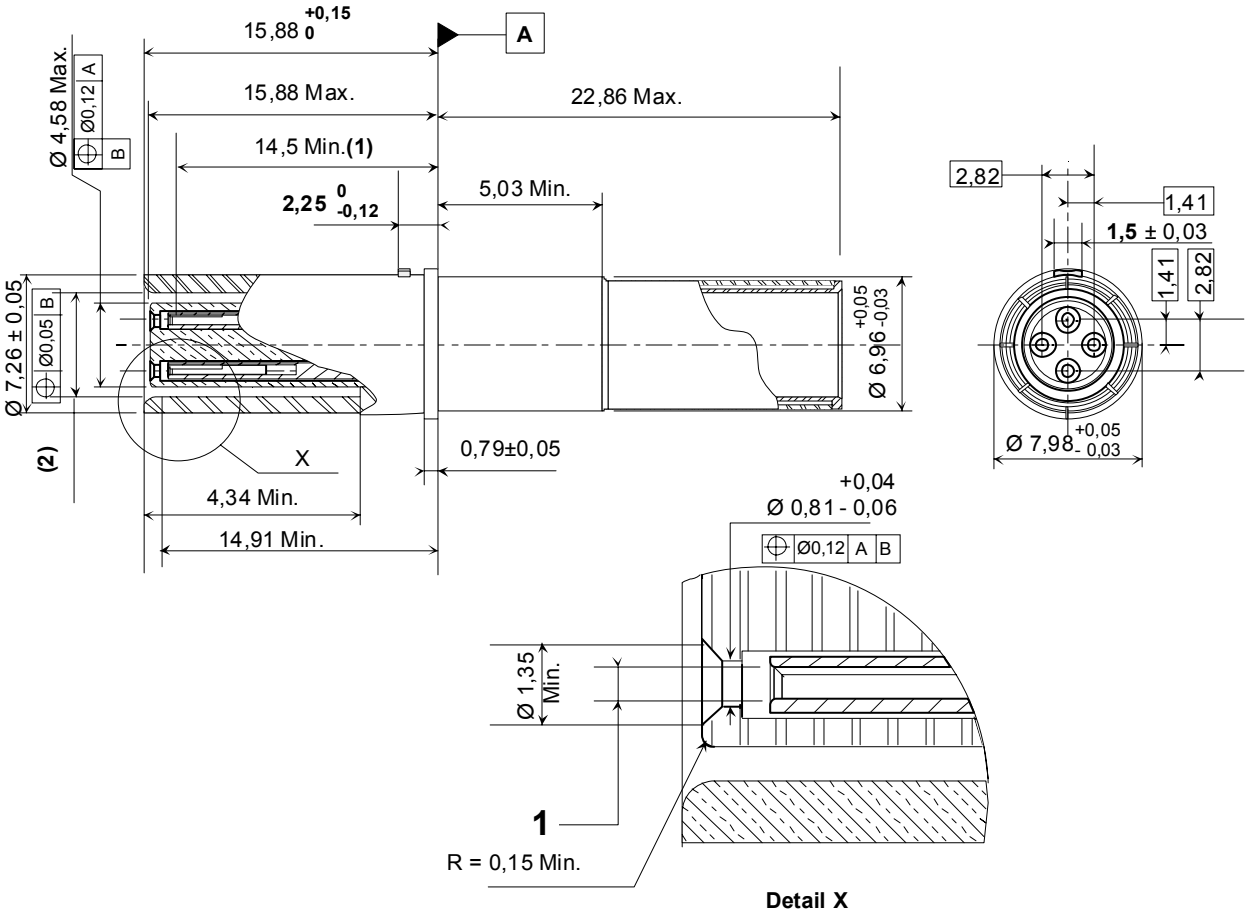
Contact with screening feature, including coaxial, triaxial, bifilar and quadrax contacts. These type E contacts are contacts with screening feature and specified high frequency characteristics, class R corresponds to an operating temperature range from – 65 °C to 150 °C.

4.2 Dimensions and mass

See Figures 1, 2 and Table 1 for dimensions.

Dimensions and tolerances are given in millimetres.

Contact mass: 6 g max.



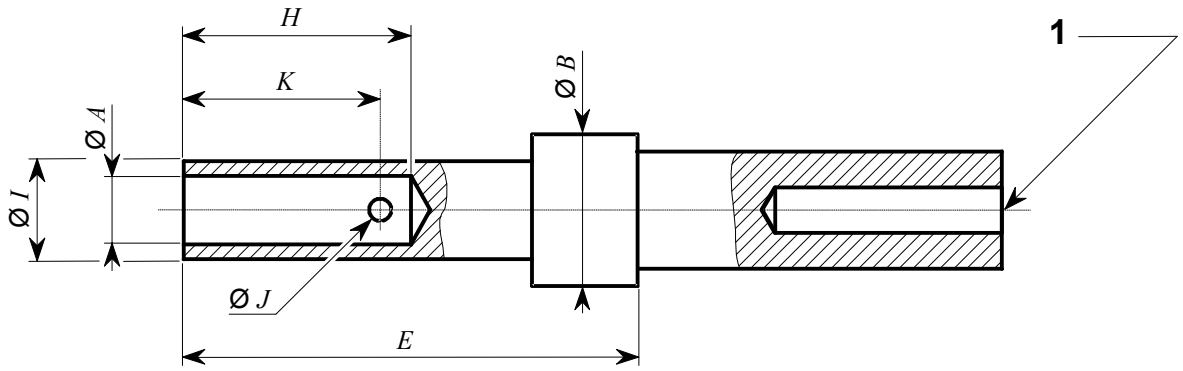
Key

1 Mates with ∅ 0,648 pin

NOTE 1 Point at which a square ended gauge pin of the same basic diameter as the mating contact first engages the female contact spring member. Provision for clearance hole shall be provided.

NOTE 2 Outer contact mates with 5,51/5,56 male contact diameter.

Figure 1



Key

1 Compatible with a contact Ø 0,622 to Ø 0,648 (size 24)

Figure 2 — Configuration, dimensions and tolerances of socket outer body

Table 1 — Dimensions and tolerances of female signal contact

∅ *A*	∅ *B*	*E*	*H*	∅ *I*	∅ *J*	*K*
0,85 0,90	1,47 1,51	5,03 5,13	3,58 3,99	1,24 1,32	0,52 0,62	3,1 3,3

4.3 Marking

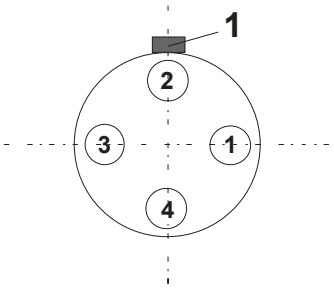
4.3.1 Marking by colour code

Not applicable.

4.3.2 Pin location identification

See Figure 3.

(Not printed on product)



Key

1 Angular positioning key

Figure 3 — Front face view

4.4 Material, surface treatment

4.4.1 Material

Body: Copper alloy.

4.4.2 Protective coating

Gold on appropriate undercoat for copper alloy parts.

Thickness not specified.

4.4.3 Dielectric

PTFE Fluoropolymer or equivalent.

4.5 Permissible cables

The cables shall conform to Table 2.

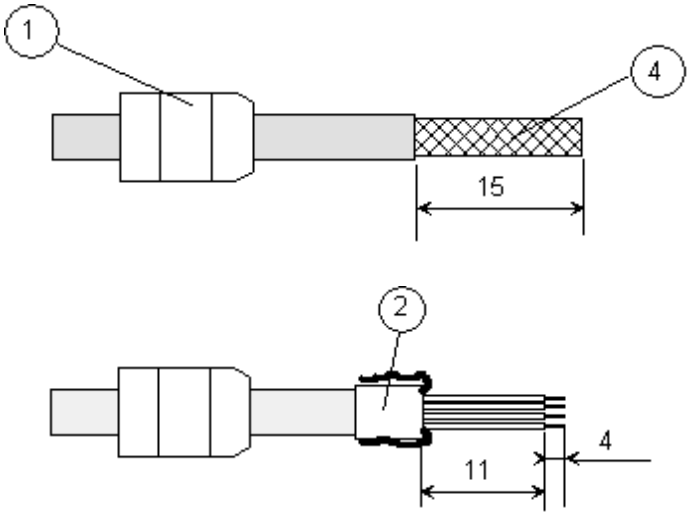
Table 2

Cable group	Type of cable
A	ABS1503KD24
Permissible cable code according to TR 6058	KD24

4.6 Wiring

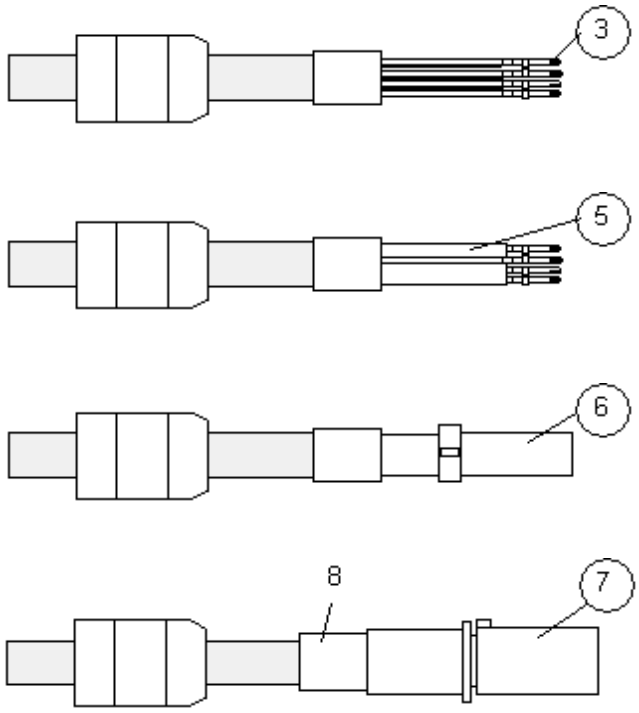
4.6.1 Preparation of the cable and crimping sequence

See Figure 4.



A Strip external layer of the cable

B Pull back the braid on/in the ferrule ② (optional). Strip each element of the quadrax cable.



C Crimp the inner contacts ③ with tools on Table 3.

D Install the spacer ⑤ and respect the circular location of each individual contact.

E Fill the insulator ⑥ over the female contacts by the front.

F Install by the front the outer contact ⑦ and care to location as specified in Figure 3. Then crimp the outer contact over the ferrule in the crimping zone ⑧ with tools as Table 3.

Key

① Sealing sleeve
② Ferrule
③ Inner female contacts
④ Braided screen
⑤ Spacer
⑥ Insulator
⑦ Outer contact body
⑧ Crimping zone of outer contact

Figure 4

4.7 Tools

Crimping tools and extraction tool.

See Table 3.

Table 3

Contact	Crimping tool	Positioner	Selector position	Extraction tool
Inner contacts	M 22520/2-01	EN 4008-003	5	NONE
Outer contact	M 22520/5-01	M 22520/5-45	B	M 81969/14-06

4.8 Tests

Tests according to EN 2591-100, see Table 4.

Table 4

<table>
<tr><th rowspan="2">EN 2591-</th><th rowspan="2">Designation of the test</th><th rowspan="2">Not applicable</th><th colspan="2">Applicable</th></tr>
<tr><th>According to EN 3155-001</th><th>Remarks</th></tr>
<tr><td>101</td><td>Visual examination</td><td></td><td>X</td><td>—</td></tr>
<tr><td>102</td><td>Examination of dimensions and mass</td><td></td><td>X</td><td>—</td></tr>
<tr><td>201</td><td>Contact resistance - low level</td><td></td><td>X</td><td>With cable code KD24
<table><tr><th rowspan="2">Contact</th><th colspan="2">Maximum contact resistance
mΩ</th></tr><tr><th>Initial</th><th>After test</th></tr><tr><td>Signal contacts</td><td>6</td><td>7,5</td></tr><tr><td>Outer body</td><td colspan="2">Not applicable</td></tr></table></td></tr>
<tr><td>202</td><td>Contact resistance at rated current</td><td></td><td>X</td><td>With cable code KD24
<table><tr><th rowspan="3">Contact</th><th colspan="3">Maximum contact resistance
mΩ</th><th rowspan="3">Rated current
A</th></tr><tr><th colspan="2">(23 ± 5) °C</th><th>(150 $^{+3}_{0}$) °C</th></tr><tr><th>Initial</th><th>After test</th><th>After test</th></tr><tr><td>Signal contacts</td><td>6</td><td>7,5</td><td>10</td><td>1</td></tr><tr><td>Outer body</td><td>2</td><td>4</td><td>6</td><td>12</td></tr></table></td></tr>
<tr><td>204</td><td>Discontinuity of contacts in the microsecond range</td><td></td><td>X</td><td>≤ 2 ns or
During the tests EN 2591-402 shock, EN 2591-403 vibrations</td></tr>
<tr><td>205</td><td>Housing (shell) electrical continuity</td><td></td><td>X</td><td>Measurements between housing of connectors and outer contact before and after tests.
Requirements: 10 mΩ max.</td></tr>
<tr><td>206</td><td>Measurement of insulation resistance</td><td></td><td>X</td><td>Method C, mated contacts
Measurements between signal contacts and between signal contacts and outer body
At ambient temperature: ≥ 5 000 MΩ
At maximum temperature:
≥ 1 000 MΩ at maximum specified temperature.</td></tr>
<tr><td>207</td><td>Voltage proof test</td><td></td><td>X</td><td>Method C
Withstand voltage at sea level:
1 000 Vr.m.s. between signal contacts and
500 Vr.m.s. between signal contacts and outer body
Withstand voltage at altitude:
125 Vr.m.s. at a pressure of
4,7 kPa (21 000 m)
Leakage current: 2 mA</td></tr>
<tr><td>211</td><td>Capacitance</td><td></td><td>X</td><td>Measurements between housing of connectors and outer contact before and after tests.</td></tr>
</table>

continued

Table 4 *(concluded)*

EN 2591-	Designation of the test	Not applicable	Applicable	
			According to EN 3155-001	Remarks
212	Surface transfer impedance		X	At 100 MHz ≤ 1mΩ
222	Insertion Loss (I.L.)		X	Measured with a KD cable. Record the value.
223	Measurement of characteristic impedance of a coaxial connector or contact		X	(100 ± 10) Ω at 100 MHz
301	Endurance at temperature		X	Method B T = 150 °C Duration: 1 000 h
305	Rapid change of temperature		X	T_A = (150 ± 2) °C T_B = (– 65 ± 2) °C
306	Mould growth		X	—
307	Salt mist		X	—
314	Immersion at low air pressure		X	To be done in the connector.
315	Fluid resistance		X	According to Table 5.
324	Interfacial sealing		X	To be done in the connector. Not applicable for inner contacts.
402	Shock		X	To be done in the connector.
403	Sinusoidal and random vibration		X	To be done in the connector.
406	Mechanical endurance		X	—
417	Tensile strength (crimped connection)		X	Initial: 26,7 N After conditioning: 20 N
418	Gauge insertion/extraction forces (female contacts)		X	Applicable
501	Soft solderability	X		—
503	Contact deformation after crimping		X	Cable size in accordance with – Signal contacts concentricity tolerance shall not exceed 0,28. – Signal contacts and outer body. Crimping zone shall not exceed 0,15 mm expansion.
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	—
514	Solderability of contacts with self-contained solder and flux	X		—

Table 5 — List of fluids

Fluid		Immersion		Temp. in oven	Number of cycles
Category	References EN 3909	Duration min.	Temp. °C		
Fuel	2	5^{+2}_{0}	25	85	7
Mineral hydraulic fluid	5	15^{+5}_{0}	85	100	5
Synthetic hydraulic fluid	3	15^{+5}_{0}	85	100	5
Mineral lubricant	7	15^{+5}_{0}	120	125	5
Synthetic lubricant	9	15^{+5}_{0}	150	125	5
Cleaning products	11	15^{+5}_{0}	25	25	5
	12				
	13	5^{+2}_{0}			2
Deicing fluid	15	15^{+5}_{0}	50	100	5
Extinguishing fluid	17	15^{+5}_{0}	– 15	25	5
Cooling fluid	19	15^{+5}_{0}	50	25	5

4.9 Gauge

The gauges used for test EN 2591-418: see Table 6 and Table 7.

Provisions for a clearance hole shall be provided for outer contact.

Dimensions are in millimetres.

Table 6 — Outer contact

Gauge diameter	
Maximum	5,560 5,555
Minimum	5,515 5,510

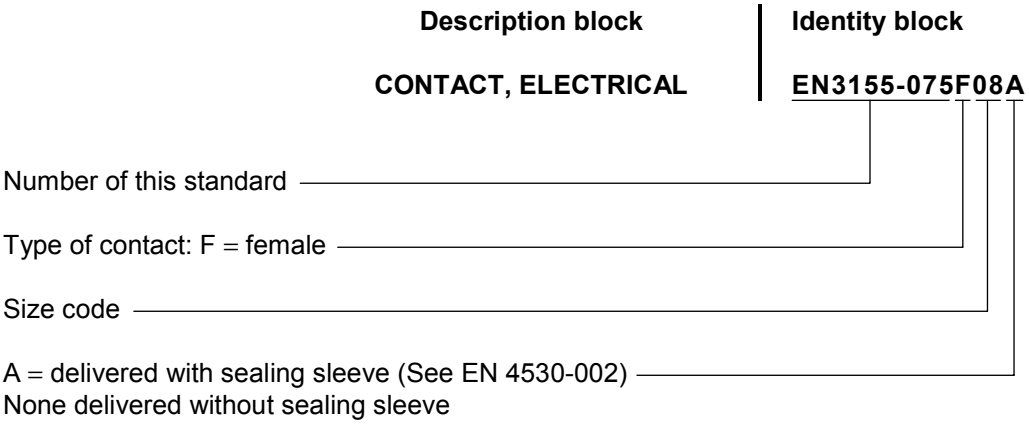
Table 7 — Inner contacts

Gauge diameter	
Maximum	0,648 0,645
Minimum	6,223 6,220

Material: tool steel or carbide steel.

5 Designation

EXAMPLE



NOTE If necessary, the code I9005 should 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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