BRITISH STANDARD

BS EN
3155-063:2009

Aerospace series — Electrical contacts used in elements of connection

Part 063: Contacts, electrical, coaxial, 50 ohms, size 1, male, type D, solder, class R — Product standard

ICS 49.060

BSI
British Standards

National foreword

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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 063 : Contacts électriques coaxiaux, 50 ohms, taille 1, mâles, type D, à souder, classe R - Norme de produit

Luft- und Raumfahrt - Elektrische Kontakte zur Verwendung in Verbindungselementen - Teil 063: Elektrische koaxiale, Stifkontakte, 50 Ohm, Größe 1, Typ D, zum Löten, Klasse R - Produktnorm

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Foreword

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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of an identical text or by endorsement, at the latest by November 2009, and conflicting national standards shall be withdrawn at the latest by November 2009.

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Introduction

The contacts defined by this standard are derived from those of SAE-AS39029/97, and intermateable with those of SAE-AS39029/98.

1 Scope

This standard specifies the required characteristics, tests and tooling applicable to male electrical coaxial contacts, size 1, type D, class R, used in elements of connection according to EN 3155-002.

It is intended to be used together with EN 3155-001.

The associated female contacts are defined in EN 3155-064.

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, *Aerospace series — Electrical contacts used in elements of connection — Part 001: Technical specification*[1]

EN 3682-001, *Aerospace series — Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous — Part 001: Technical specification*

TR 6058, *Aerospace series — Cable code identification list*[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 D contacts are for application where contacts with a screening feature are requested and class R corresponds to an operating temperature range from – 65 °C to 150 °C.

4.2 Dimensions and mass

See Figures 1 and 2.

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

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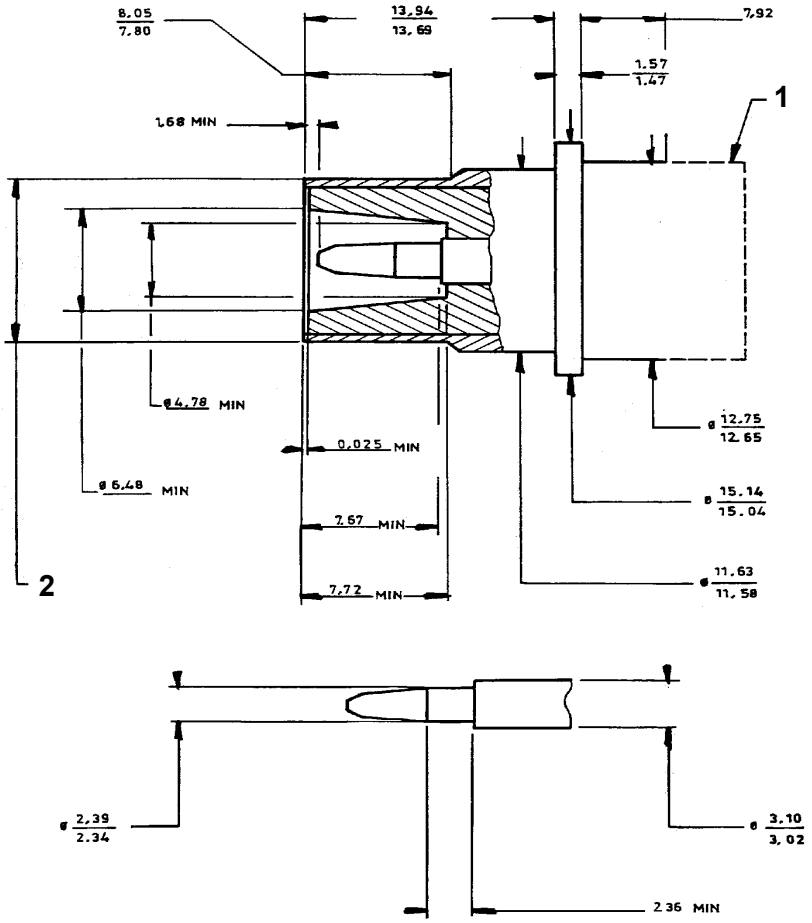
* All parts quoted in this document.

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

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



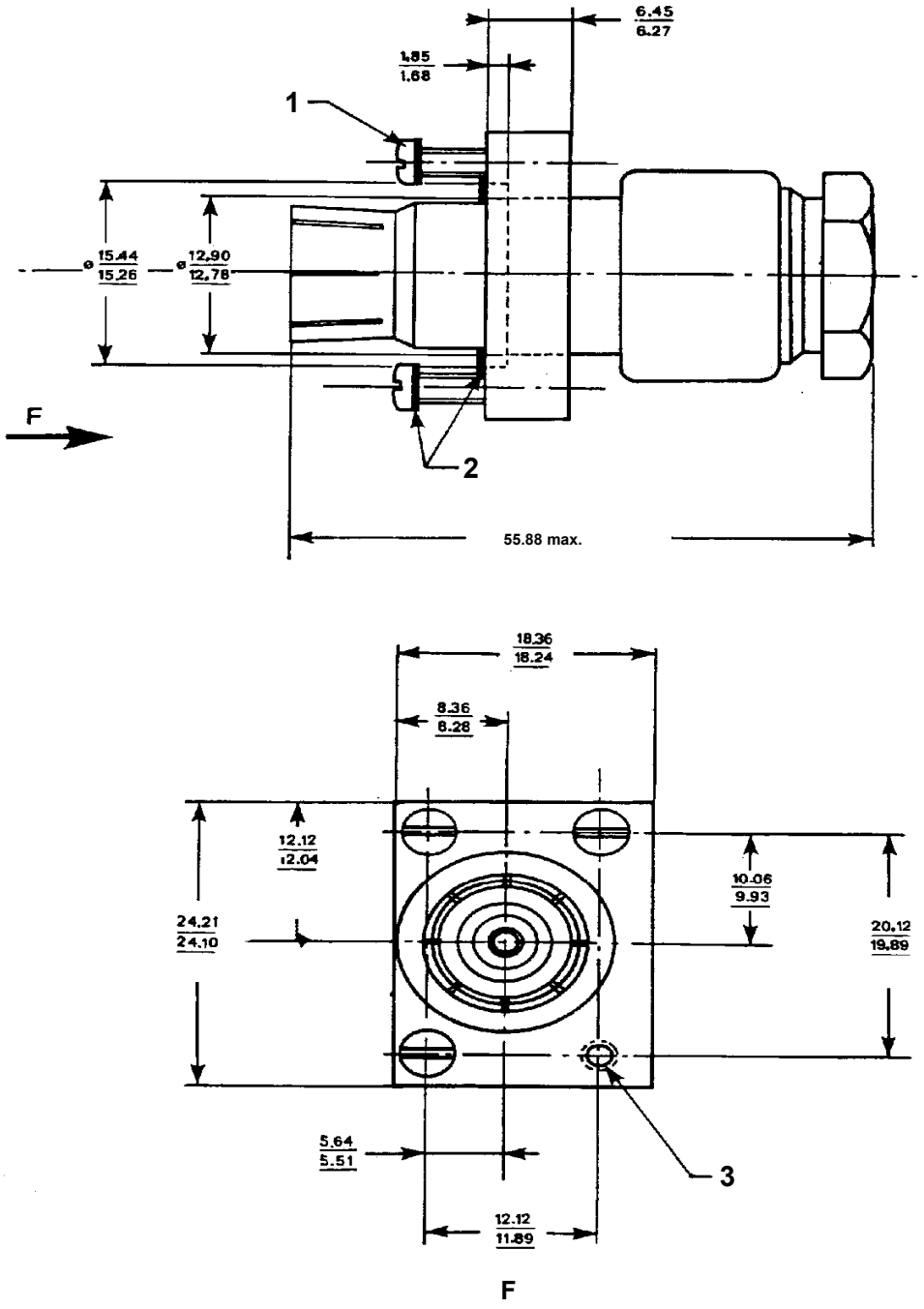
Inner pin contact

Key

1 Dotted shape optional

2 Flare to meet gage figure

Figure 1



Key

1 Screw size 4-40 UNC 9,52 ± 0,25 length (4 PLS)
2 Seal (optional)
3 4-40 UNC-2B thread (4 PLS)

Figure 2

Mass: 48 g

4.3 Marking by colour code

Not applicable

4.4 Material, surface treatment

— Outer body material : copper alloy.

— Center contact : copper alloy.

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

— Dielectric : PTFE, or equivalent.

— gasket : Silicone rubber.

4.5 Typical cables

See Figure 3 and Table 1.

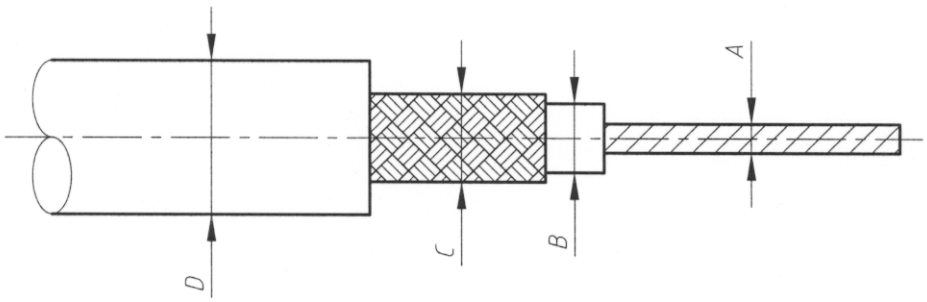


Figure 3

Table 1

Permissible cable group code	Permissible cable code according to TR 6058	Dimensions of cable							
		A		*B*		*C*		*D*	
		min.	max.	min.	max.	min.	max.	min.	max.
A	WA	–	–	–	–	–	–	–	–
B	XB	0,94	–	2,83	3,07	3,87	4,11	4,83	5,07
	XG	0,94	–	2,83	3,07	3,25	3,49	4,68	4,92
C	XD	2,25	–	7,10	7,40	7,74	8,04	10,63	10,97
	XR	2,40	–	7,13	7,37	7,77	7,94	10,15	10,65
	XS	2,40	–	7,13	7,37	8,41	8,65	10,65	11,15

4.6 Cable stripping and wiring method

4.6.1 For cable group code "A" and "C"

1) Tighten adaptator (10) with sealing ring (11) on body (21).

2) Trim jacket to dimension shown, see Figure 4.

3) Place nut (7) washer (6) and sealing ring (5) on cable.

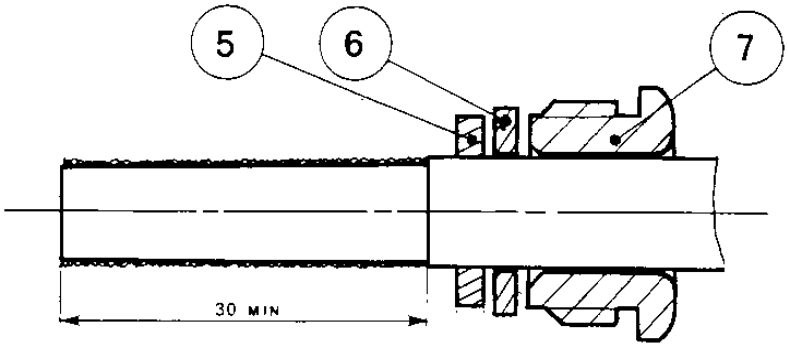


Figure 4

4) Slide braid cone (4) until it stops against jacket, see Figure 5.

5) Comb out braid and cut it to proper length as shown and cut first the dielectric core and after inner conductor to dimensions shown blow.

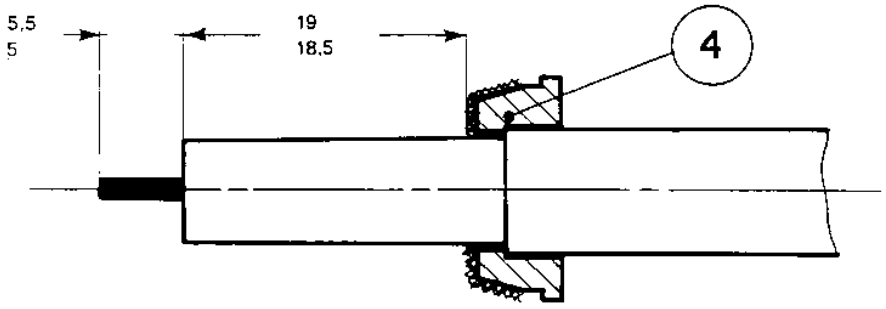


Figure 5

6) Solder inner contact (1) on inner conductor, see Figure 6.

7) Insert the cable and parts in the body.

8) Tighten nut (7) (5,42 Nm pound torque).

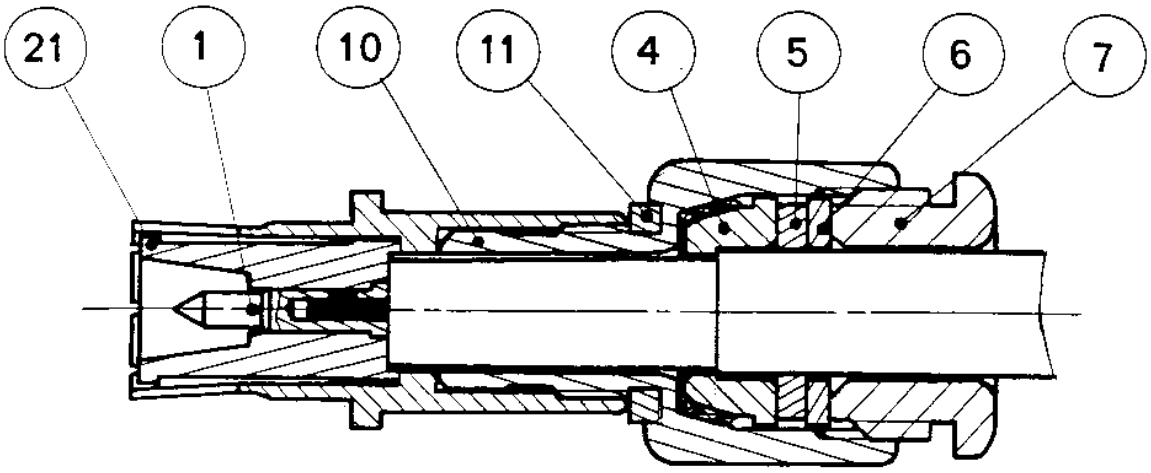


Figure 6

4.6.2 For cable group code "B"

1) Trim jacket to dimension shown, see Figure 7.

2) Place nut (7) washer (6) and sealing ring (5) on cable.

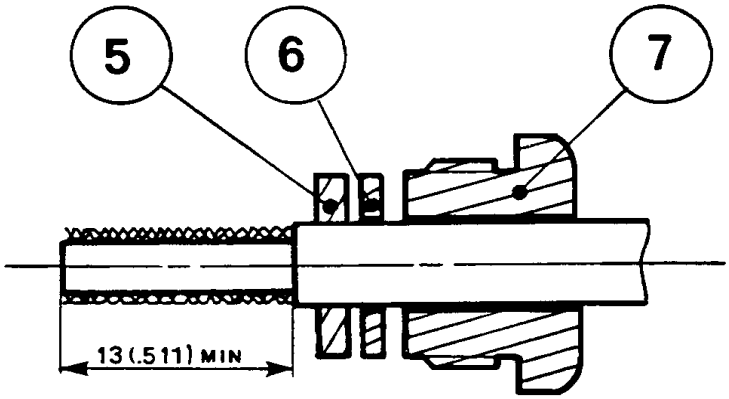


Figure 7

3) Slide braid cone (4) until it stops again jacket, see Figure 8.

4) Comb out braid and cut it to proper length as shown and cut first the dielectric core and after inner conductor to dimensions shown below.

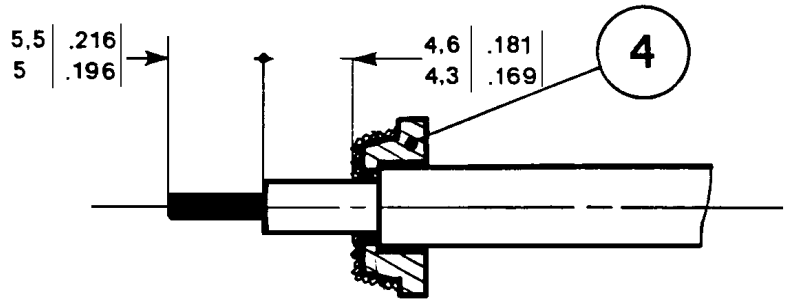


Figure 8

5) Place distance piece (3), rear insulator (2).

6) Solder inner contact (1) on inner conductor.

7) Insert the cable and parts into the body (21).

8) Tighten (7) (5,42 Nm pound torque).

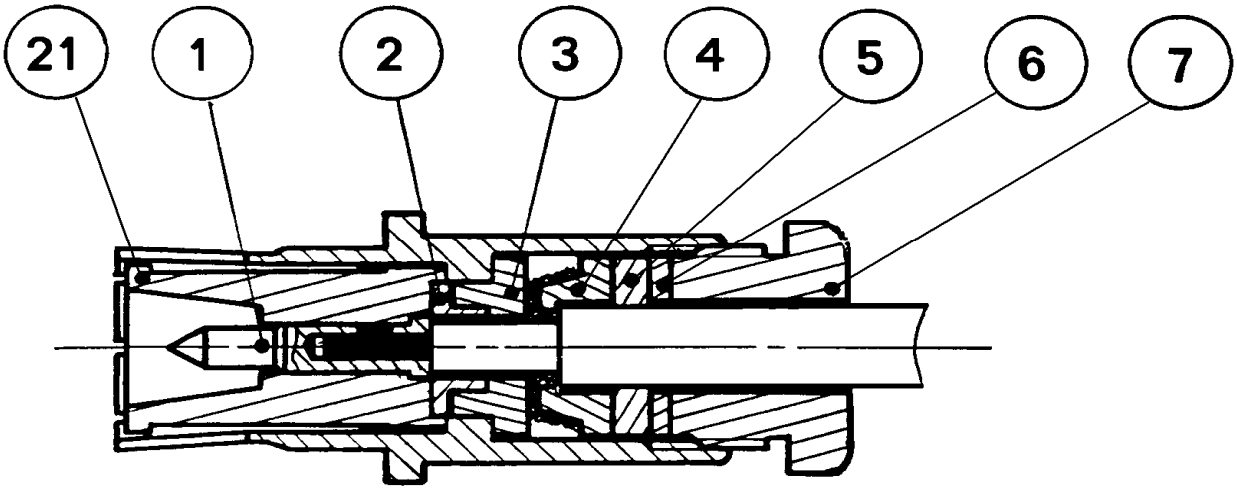


Figure 9

4.7 Tests

Tests according to EN 2591-100, see Table 2.

Table 2

<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>See 4.2.</td></tr>
<tr><td>201</td><td>Contact resistance - low level</td><td></td><td>X</td><td>Test temperature: ambient
<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>Central</td><td>1</td><td>1,5</td></tr><tr><td>Outer</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>—
<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">(25^{+3}_{0}) °C</th><th>(150^{+3}_{0}) °C</th></tr><tr><th>Initial</th><th>After test</th><th>After test</th></tr><tr><td>Central</td><td>1</td><td>1,5</td><td>3,0</td><td>1</td></tr><tr><td>Outer</td><td>0,2</td><td>0,4</td><td>0,8</td><td>7,5</td></tr></table></td></tr>
<tr><td>204</td><td>Discontinuity of contacts in the microsecond range</td><td></td><td>X</td><td>Method B
Duration of discontinuity: ≤ 0,1 µs
Test duration:
Throughout the duration of tests EN 2591-402 and EN 2591-403</td></tr>
<tr><td>206</td><td>Measurement of insulation resistance</td><td></td><td>X</td><td>Method C
Mated contacts
At ambient temperature: ≥ 5 000 MΩ
At 150 °C ≥ 2 000 MΩ</td></tr>
<tr><td>207</td><td>Voltage proof test</td><td></td><td>X</td><td>Method C
Proof test voltage at sea level:
2 500 VAC r.m.s. between central contact and outer contact.
Proof test voltage at altitude:
600 VAC r.m.s. at 1,1 kPa pressure (33 000 m)
Leakage current: 2mA</td></tr>
<tr><td>212</td><td>Surface transfer impedance</td><td>X</td><td></td><td>—</td></tr>
<tr><td>221</td><td>Voltage Standing Wave Ratio (VSWR)</td><td></td><td>X</td><td>1,70: 1 max.
from 0 GHz to 5 GHz</td></tr>
</table>

continued

Table 2 *(concluded)*

EN 2591-	Designation of the test	Not applicable	Applicable	
			According to EN 3155-001	Remarks
222	Insertion Loss (I.L.)		X	0,3 dB max. from 0 GHz to 5 GHz
301	Endurance at temperature		X	$T = (150\ ^{+5}_{0})$ °C Duration: 1 000 h
305	Rapid change of temperature		X	$T_A = (150\ ^{+5}_{0})$ °C $T_B = (-\ 65\ ^{+5}_{0})$ °C
306	Mould growth		X	—
307	Salt mist		X	—
315	Fluid resistance		X	According to EN 3682-001.
402	Shock		X	Severity 30, Method A, See EN 3682-001 in relation with the figures in Subclause "Static load".
403	Sinusoidal and random vibration		X	According to EN 3682-001, Subclause "Vibrations".
406	Mechanical endurance		X	—
417	Tensile strength (crimped connection)		X	Cable according to TR 6058 code XD Outer: > 56 N
418	Gauge insertion/extraction forces (female contacts)		X	Gauge as described in Figure 10. **Insertion** Initial = 31 N max when inserted a minimum of 3,2 mm.
501	Soft solderability	X		—
503	Contact deformation after crimping		X	Cable size in accordance with Table 1.
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	—

4.8 Gauge

See Figure 10.

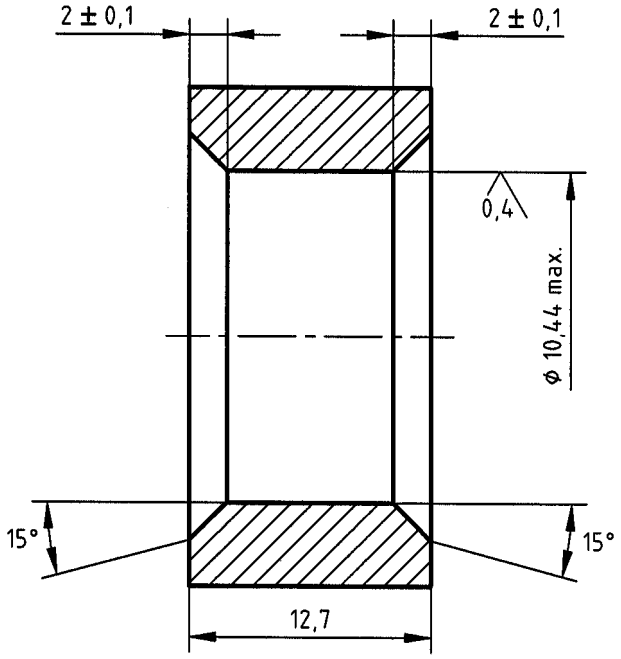


Figure 10

5 Designation

EXAMPLE

Description block	Identity block
CONTACT, ELECTRICAL	**EN3155-063M01A1**

Number of this standard

Type of contact: M = male

Contact size

Permissible cable group code

Code for contact model (see Table 3)

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

Table 3

Code	Contact model
1	Unsealed version
2	Semi environmental version

6 Marking

See EN 3155-001.

7 Delivery conditions

The contacts are packaged and identified individually. Conditioning shall provide protection of the contacts against any eventual damage.

Packaging shall include:

a) the manufacturer's name;

b) the designation defined in Clause 5;

c) the manufacturer's reference;

d) the manufacturing date code (year-week).

8 Technical specification

See EN 3155-001.

Bibliography

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

[2] EN 3155-064, *Aerospace series — Electrical contacts used in elements of connection — Part 064: Contacts, electrical, coaxial, 50 ohms, size 1, female, type D, solder, class R — Product standard*

[3] SAE-AS39029/97, *Contacts, electrical connector, pin, crimp removable, coaxial size 1 (for DOD-C-83527 connectors)*[3]

[4] SAE-AS39029/98, Contacts, electrical connector, socket, crimp removable, coaxial size 1 (for DOD-C-83527 connectors)[3]

[3] Published by: Society of Automotive Engineers, Inc. (SAE), 400 Commonwealth Drive, Warrendale, PA 15096-0001, USA

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