

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Radio-frequency connectors –
Part 68: Sectional specification for series TRK bayonet coupling triaxial
connectors**

**Connecteurs pour fréquences radioélectriques –
Partie 68: Spécification intermédiaire relative aux connecteurs triaxiaux à
accouplement à baïonnette de série TRK**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO-FREQUENCY CONNECTORS –

**Part 68: Sectional specification for series TRK bayonet
coupling triaxial connectors**

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The text of this International Standard is based on the following documents:

Draft	Report on voting
46F/596/FDIS	46F/610/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts of the IEC 61169 series, under the general title: *Radio-frequency connectors*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

RADIO-FREQUENCY CONNECTORS –

Part 68: Sectional specification for series TRK bayonet coupling triaxial connectors

1 Scope

This part of IEC 61169, which is a sectional specification (SS), provides information and rules for the preparation of detail specifications (DS) for series TRK bayonet coupling triaxial connectors. The series TRK bayonet coupling triaxial connectors having the advantages of quick connection and separation, high reliability, small size, good salt characteristics, four polarizations to prevent error-mate etc., can be connected to symmetrically twisted pair cables or triaxial cables. They have been widely used in 1553B data bus systems or other communication systems for digital signal transmission.

It specifies mating face dimensions for series TRK bayonet coupling triaxial connectors, gauging information and tests selected from IEC 61169-1, applicable to all detail specifications relating to series TRK triaxial connectors.

This document indicates recommended performance characteristics to be considered when writing a detail specification and it covers test schedules and inspection requirements for assessment levels M and H.

NOTE Metric dimension are original dimensions. All undimensioned pictorial configurations are for reference purpose only.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 61169-1:2013, *Radio frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

IEC 61169-1-5, *Radio frequency connectors – Part 1-5: Electrical test methods – Rise time degradation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61169-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1**coaxial pin contact**

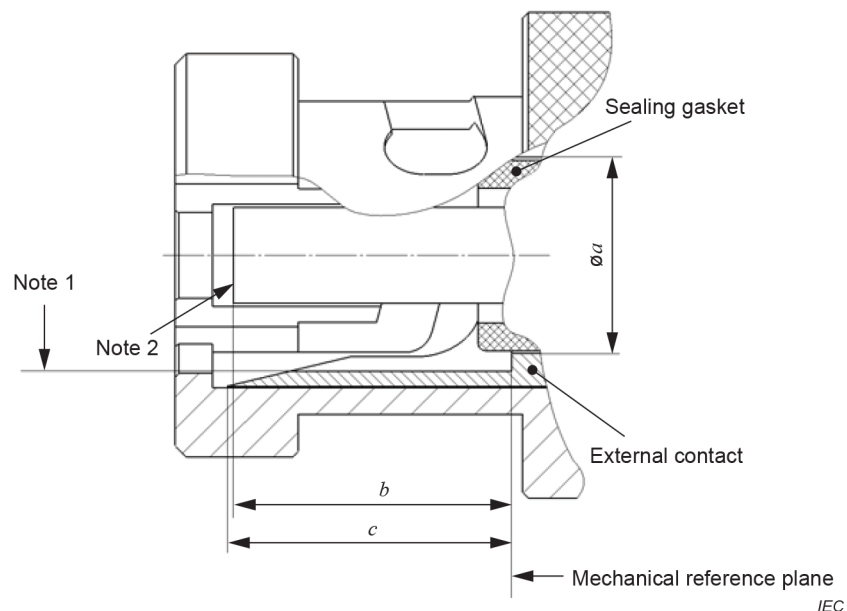
connecting part with a coaxial structure, the outer conductor of which is a pin and the inner conductor is a socket

3.2**coaxial socket contact**

connecting part with a coaxial structure, the outer conductor of which is a socket and the inner conductor is a pin

4 Mating face and gauge information**4.1 Mating face dimensions****4.1.1 Plug connector****4.1.1.1 General**

The mating face of plug connector is shown in Figure 1 and its dimensions are shown in Table 1.



NOTE 1 Slot design of alignment fingers is optional.

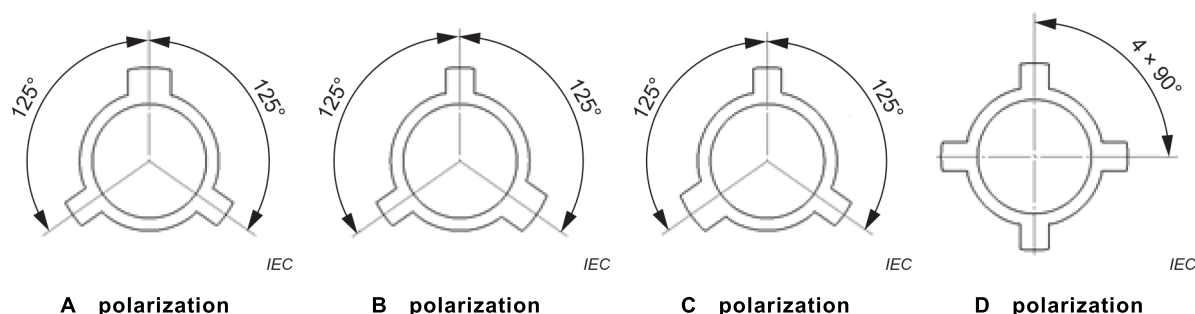
NOTE 2 See Figure 11 and Figure 12 for coaxial contact requirements.

Figure 1 – Plug connector**Table 1 – Dimensions of plug connector**

Ref.	mm	
	Min.	Max.
<i>a</i>	-	5,10
<i>b</i>	6,30	8,10
<i>c</i>	7,14	7,70

4.1.1.2 Locating grooves polarization of plug connector

Seen from the mating face, the locating grooves of the plug connector can be divided into A, B, C and D four polarizations, which are shown in Figure 2.



NOTE Angles for reference.

Figure 2 – Locating grooves polarization of plug connector

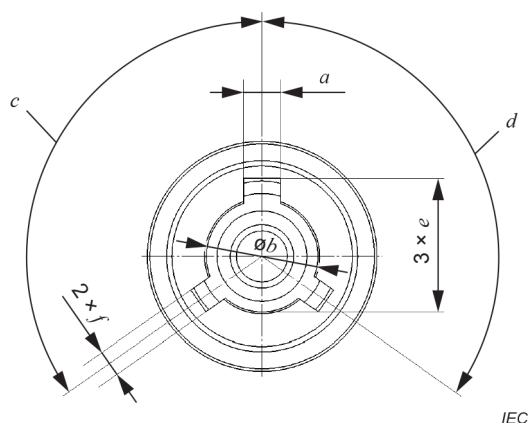
4.1.1.3 Locating groove structure of plug connector

A polarization mating face of plug connector with three bayonets shall be in accordance with Figure 3, and its dimensions are shown in Table 2. The mating face of B polarization and C polarization is similar to that of A polarization, but the position of the locating grooves shall be the same as that of B polarization and C polarization in 4.1.1.2 respectively.

D polarization mating face of plug connector with four bayonets shall be in accordance with Figure 4, and its dimensions are shown in Table 3.

The unfolded drawing of A polarization bayonet groove of plug connector shall be in accordance with Figure 5, and its dimensions are shown in Table 4. The unfolded design of the positioning grooves for B polarization and C polarization is similar to that of A polarization, but the position of the positioning grooves shall be the same as for B polarization and C polarization in 4.1.1.2 respectively.

The unfolded drawing of D polarization bayonet groove of plug connector shall be in accordance with Figure 6, and its dimensions are shown in Table 5.

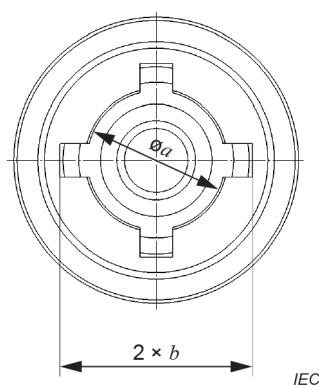


NOTE The mating face of B polarization and C polarization is similar to that of A polarization, but the position of the locating grooves are the same as that of B polarization and C polarization in 4.1.1.2 respectively.

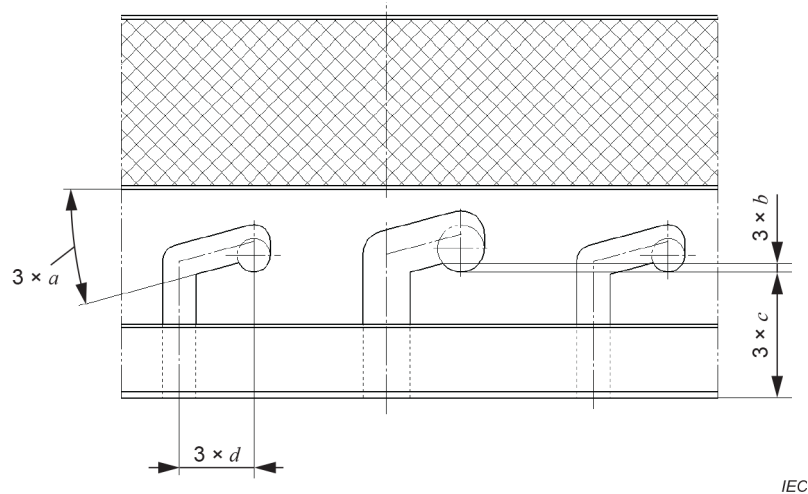
Figure 3 – A polarization mating face of plug connector with three bayonets

Table 2 – A polarization mating face dimensions of plug connector with three bayonets

Ref.	mm	
	Min.	Max.
<i>a</i>	1,95	2,10
<i>b</i>	Note	
<i>c</i>	124°	126°
<i>d</i>	124°	126°
<i>e</i>	Note	
<i>f</i>	1,42	1,73
NOTE To mate with jack connector in Figure 9.		

**Figure 4 – D polarization mating face of plug connector with four bayonets****Table 3 – D polarization mating face dimensions of plug connector with four bayonets**

Ref.	mm	
	Min.	Max.
<i>a</i>	Note	
<i>b</i>	Note	
NOTE To mate with jack connector in Figure 10.		



NOTE The unfolded design of the positioning grooves for B polarization and C polarization is similar to that of A polarization, but the position of the positioning grooves are the same as for B polarization and C polarization in 4.1.1.2 respectively.

Figure 5 – Unfolded drawing of A polarization bayonet groove of plug connector

Table 4 – Unfolded drawing dimensions of A polarization bayonet groove of plug connector

Ref.	mm	
	Min.	Max.
<i>a</i>	15°	
<i>b</i>	0,38	-
<i>c</i>	5,51	-
<i>d</i>	45°	

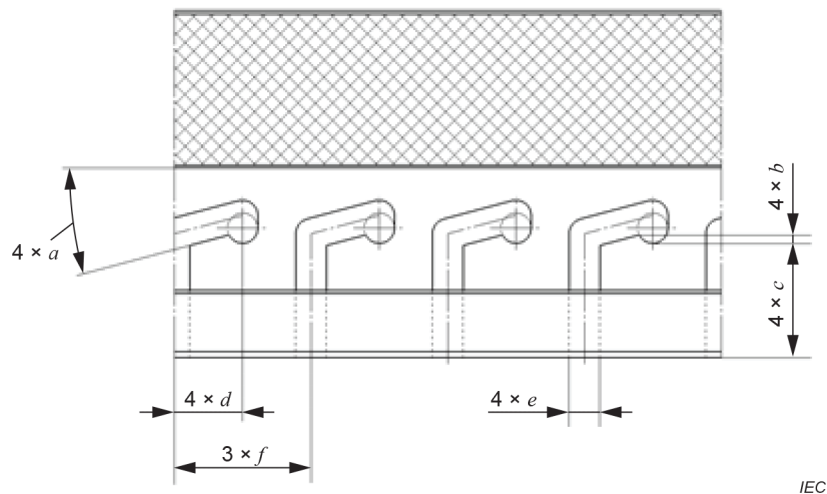


Figure 6 – Unfolded drawing of D polarization bayonet groove of plug connector

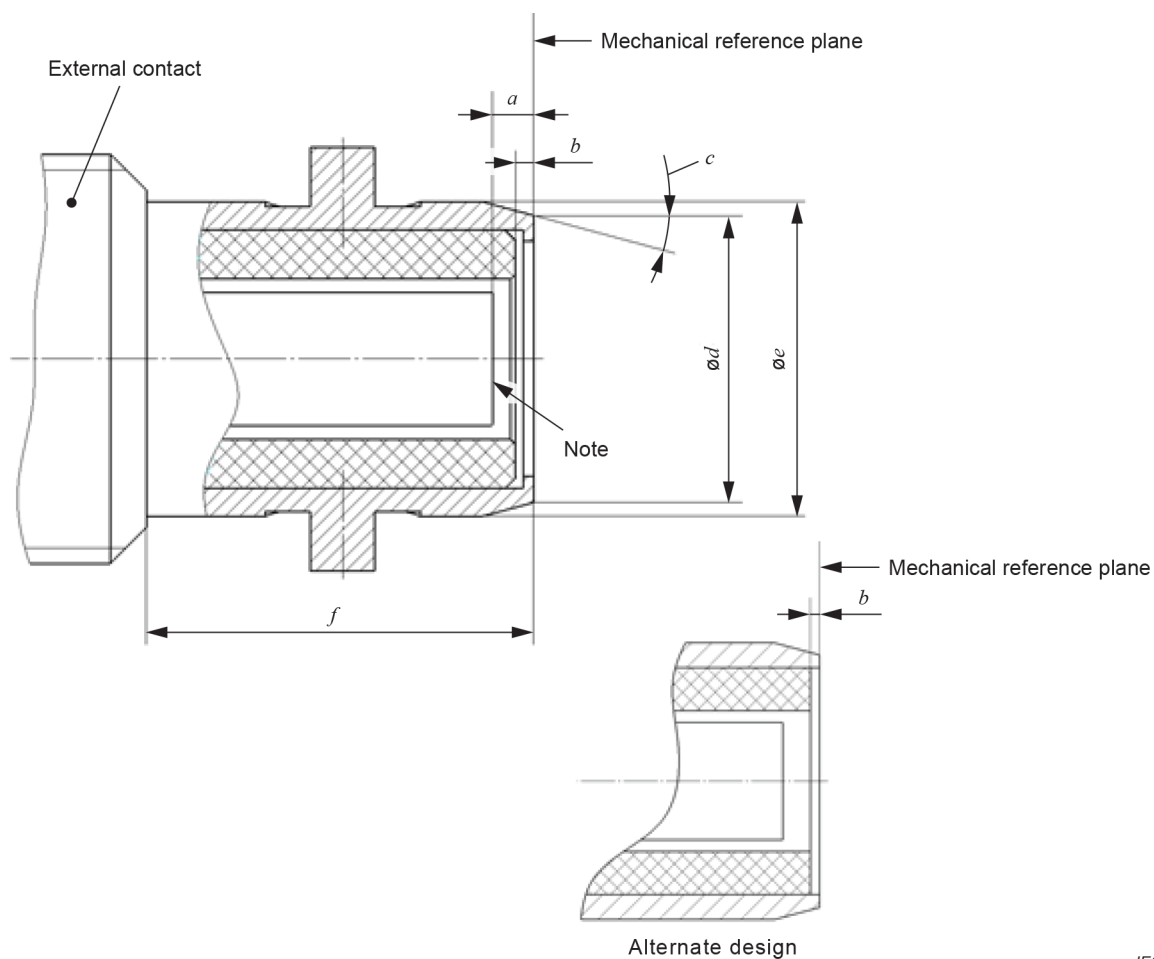
Table 5 – Unfolded drawing dimensions of D polarization bayonet groove of plug connector

Ref.	mm	
	Min.	Max.
<i>a</i>	15°	
<i>b</i>	0,38	-
<i>c</i>	5,51	-
<i>d</i>	45°	
<i>e</i>	1,42	-
<i>f</i>	Note	
NOTE To mate with jack connector in Figure 10.		

4.1.2 Receptacle connector

4.1.2.1 General

The mating face of receptacle connector is shown in Figure 7 and its dimensions are shown in Table 6.



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NOTE See Figure 11 and Figure 12 for coaxial contact requirements.

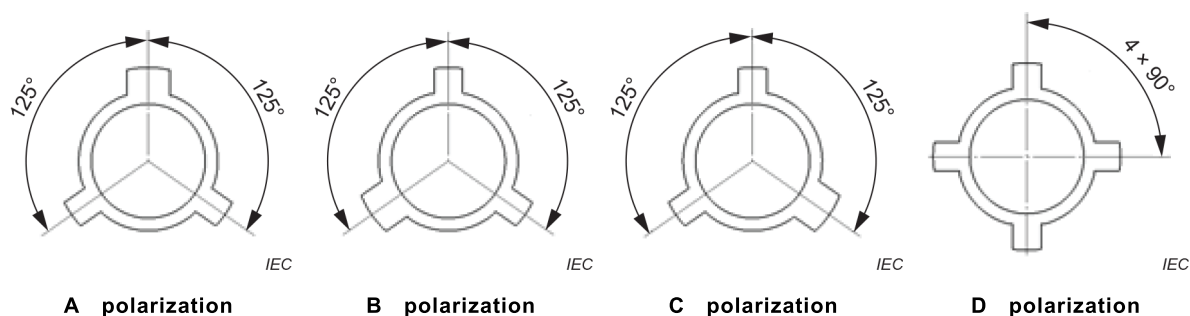
Figure 7 – Receptacle connector

Table 6 – Dimensions of receptacle connector

Ref.	mm	
	Min.	Max.
<i>a</i>	0,25	-
<i>b</i>	-	0,92
<i>b</i> (alternate design)	-	0,45
<i>c</i>	14°	22°
<i>d</i>	5,33	5,56
<i>e</i>	6,04	6,12
<i>f</i>	10,70	-

4.1.2.2 Locating keys polarization of receptacle connector

Seen from the mating face, the locating keys of the receptacle connector can be divided into A, B, C and D four polarizations, which are shown in Figure 8.



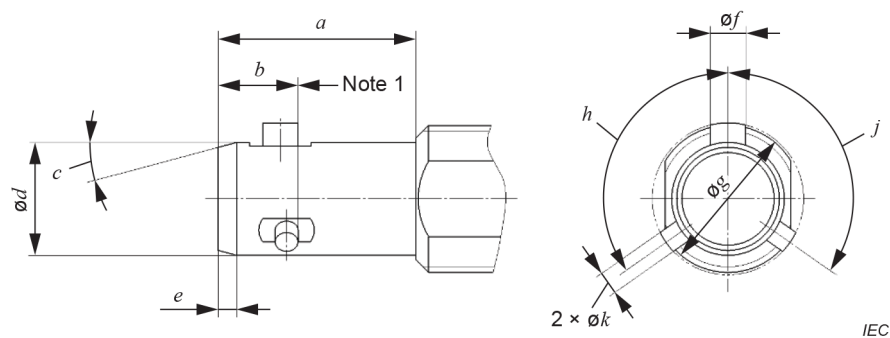
NOTE Angles for reference.

Figure 8 – Locating keys polarization of receptacle connector

4.1.2.3 Locating key structure of receptacle connector

A polarization mating face of receptacle connector with three bayonets shall be in accordance with Figure 9, and its dimensions are shown in Table 7. The mating face of B polarization and C polarization is similar to that of A polarization, but the position of the locating keys shall be the same as that of B polarization and C polarization in 4.1.2.2 respectively.

D polarization mating face of receptacle connector with four bayonets shall be in accordance with Figure 10, and its dimensions are shown in Table 8.



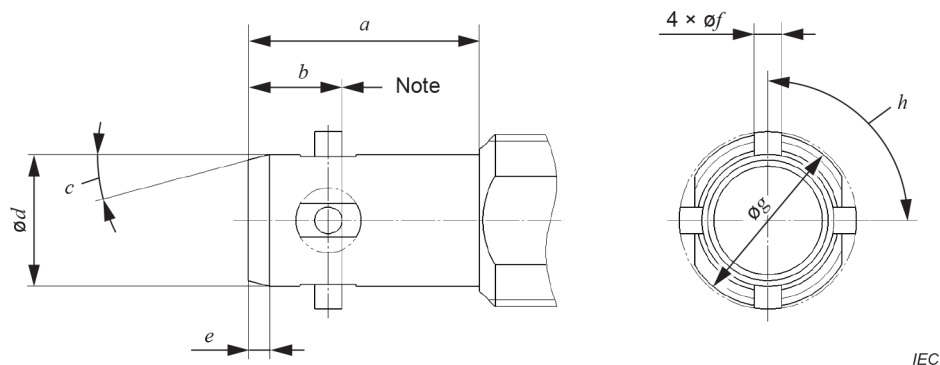
NOTE 1 0,127 max flat to meet reference *b*.

NOTE 2 The mating face of B polarization and C polarization is similar to that of A polarization, but the position of the locating keys are the same as that of B polarization and C polarization in 4.1.2.2 respectively.

Figure 9 – A polarization mating face of receptacle connector with three bayonets

Table 7 – A polarization mating face dimensions of receptacle connector with three bayonets

Ref.	mm	
	Min.	Max.
<i>a</i>	10,70	10,80
<i>b</i>	4,18	4,36
<i>c</i>	14°	22°
<i>d</i>	6,04	6,12
<i>e</i>	-	-
<i>f</i>	1,83	1,93
<i>g</i>	8,10	8,20
<i>h</i>	124°	126°
<i>j</i>	124°	126°
<i>k</i>	1,22	1,32



NOTE 0,127 max flat to meet reference *b*.

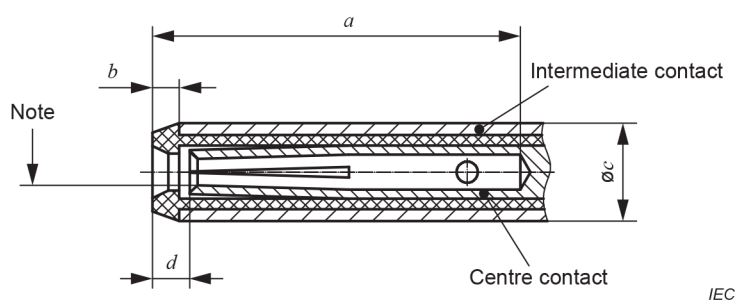
Figure 10 – D polarization mating face of receptacle connector with four bayonets

Table 8 – D polarization mating face dimensions of receptacle connector with four bayonets

Ref.	mm	
	Min.	Max.
<i>a</i>	10,70	10,80
<i>b</i>	4,18	4,36
<i>c</i>	14°	22°
<i>d</i>	6,04	6,12
<i>e</i>	-	-
<i>f</i>	1,22	1,32
<i>g</i>	8,10	8,20
<i>h</i>	89.5°	90.5°

4.1.3 Coaxial pin contact

The mating face of coaxial pin contact is shown in Figure 11 and its dimensions are shown in Table 9.



NOTE Slot design is optional.

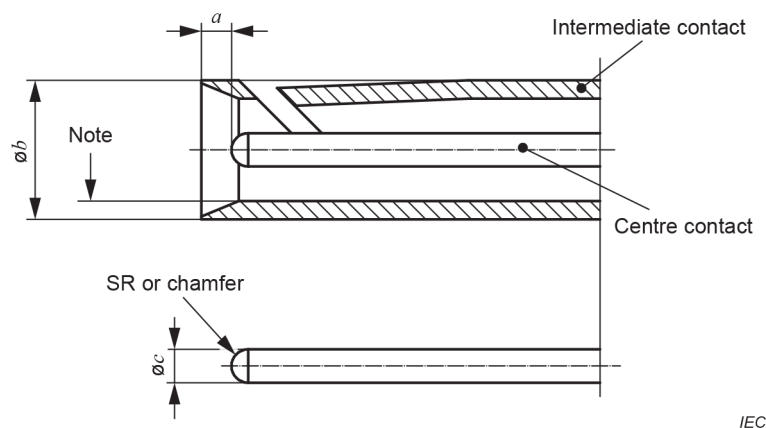
Figure 11 – Coaxial pin contact

Table 9 – Dimensions of coaxial pin contact

Ref.	mm	
	Min.	Max.
<i>a</i>	7,09	-
<i>b</i>	0,35	-
<i>c</i>	1,82	1,88
<i>d</i>	1,00	1,55

4.1.4 Coaxial socket contact

The mating face of coaxial socket contact is shown in Figure 12 and its dimensions are shown in Table 10.



NOTE Slot design is optional.

Figure 12 – Coaxial socket contact

Table 10 – Dimensions of coaxial socket contact

Ref.	mm	
	Min.	Max.
a	0,18	0,99
b	-	2,70
c	0,597	0,623

4.2 Gauges for resilient contact

4.2.1 Gauge for socket centre contact

The gauge for socket centre contact of connector is shown in Figure 13 and its dimensions are shown in Table 11.

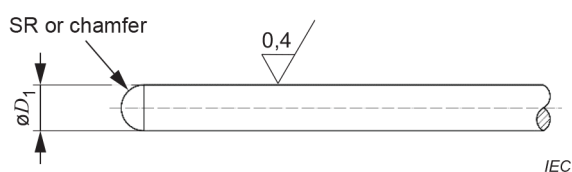


Figure 13 – Gauge for socket centre contact

Table 11 – Dimensions of gauge for socket centre contact

Ref.	Gauge A		Gauge B		Gauge C	
	(For sizing purpose)		(For insertion purpose)		(For separation purpose)	
	Min.	Max.	Min.	Max.	Min.	Max.
D_1	0,623	0,628	0,623	0,628	0,592	0,597
Material: steel, polished.						

Test procedure is as follows.

a) Sizing test

Gauge A shall be inserted into the socket centre contact of the connector three times with a minimum insertion depth of 5,2 mm. This is a sizing operation.

b) Insertion test

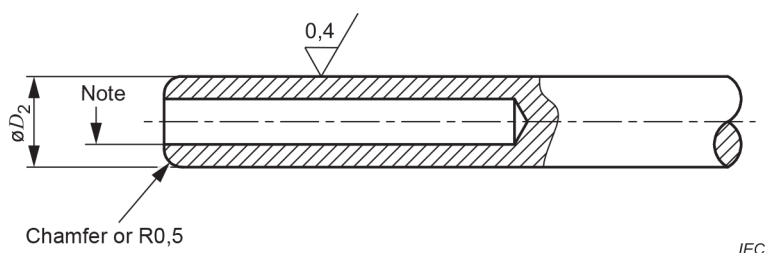
Following the sizing operation, if specified in the detail specification, gauge B shall be vertically inserted into the socket centre contact of the connector with a minimum insertion depth of 5,2 mm. When this test is required, the insertion force shall not exceed 1,67 N.

c) Separation test

After insertion test, gauge C shall be vertically inserted into the socket centre contact of the connector with a minimum insertion depth of 5,2 mm and then be separated. The separation force shall not be less than 0,14 N.

4.2.2 Gauge for socket intermediate contact

The gauge for socket intermediate contact of the connector is shown in Figure 14 and its dimensions are shown in Table 12.



NOTE Hole design optional.

Figure 14 – Gauge for socket intermediate contact

Table 12 – Dimensions of gauge for socket intermediate contact

Ref.	Gauge A		Gauge B		Gauge C	
	(For sizing purpose)		(For insertion purpose)		(For separation purpose)	
	Min.	Max.	Min.	Max.	Min.	Max.
D_2	1,880	1,885	1,880	1,885	1,815	1,829
Material: steel, polished.						

Test procedure is as follows.

a) Sizing test

Gauge A shall be inserted into the socket intermediate contact of the connector three times with a minimum insertion depth of 5,7 mm. This is a sizing operation.

b) Insertion test

Following the sizing operation, if specified in the detail specification, gauge B shall be vertically inserted into the socket intermediate contact of the connector with a minimum insertion depth of 5,7 mm. When this test is required, the insertion force shall not exceed 5,56 N.

c) Separation test