



**SLOVENSKI STANDARD**  
**oSIST prEN 3646-001:2024**  
**01-maj-2024**

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**Aeronavtika - Konektorji, električni, okrogli, bajonetno sklapljanje, stalna delovna temperatura 175 °C ali 200 °C - 001. del: Tehnična specifikacija**

Aerospace series - Connectors, electrical, circular, bayonet coupling, operating temperature 175 °C or 200 °C continuous - Part 001: Technical specification

Luft- und Raumfahrt - Elektrische Rundsteckverbinder mit Bajonettkupplung, Betriebstemperatur 175 °C oder 200 °C konstant - Teil 001: Technische Lieferbedingungen

Série aérospatiale - Connecteurs électriques circulaires à accouplement par baïonnettes, température d' utilisation 175 °C ou 200 °C continu - Partie 001: Spécification technique

**Ta slovenski standard je istoveten z: prEN 3646-001**

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**ICS:**

31.220.10	Vtiči in vtičnice, konektorji	Plug-and-socket devices. Connectors
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

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NORME EUROPÉENNE  
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**DRAFT**  
**prEN 3646-001**

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ICS 49.060

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English Version

**Aerospace series - Connectors, electrical, circular, bayonet  
coupling, operating temperature 175 °C or 200 °C  
continuous - Part 001: Technical specification**

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mit Bajonettkupplung, Betriebstemperatur 175 °C oder  
200 °C konstant - Teil 001: Technische  
Lieferbedingungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 3646-001:2024) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 3646-001:2015.

The main changes compared to the previous edition are as follows:

- normative references updated;
- key and keyway quotation replaced in Figure 3;
- editorial revision of the document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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**prEN 3646-001:2024 (E)****Introduction**

This family of connectors is derived from MIL-DTL-26482, series 2, the NAS 1599 bayonet connector with which it is intermateable and which uses AS-39029 for the contacts. It is particularly suitable for use on aircraft applying EN 2282.

These connectors are distinguishable from MIL-DTL-26482 and NAS 1599 by:

- being of a lower mass;
- having reduced dimensions;
- accepting smaller cables.

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## 1 Scope

This document specifies the general characteristics, the conditions for qualification, acceptance and quality assurance, as well as the test programmes and groups for bayonet coupling circular connectors, intended for use in an operating temperature range of  $-65\text{ °C}$  to  $175\text{ °C}$  or  $200\text{ °C}$  continuous according to the class and models.

## 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.

EN 2266-002, *Aerospace series - Cables, electrical, for general purpose - Operating temperatures between  $-55\text{ °C}$  and  $200\text{ °C}$  - Part 002: General*

EN 2591,<sup>1</sup> *Aerospace series — Elements of electrical and optical connection — Test methods*

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

EN 3197, *Aerospace series - Design and installation of aircraft electrical and optical interconnection systems*

EN 3646-002, *Aerospace series - Connectors, electrical, circular, bayonet coupling, operating temperature  $175\text{ °C}$  or  $200\text{ °C}$  continuous - Part 002: Specification of performance and contact arrangements*

EN 9133, *Aerospace series - Quality Management Systems - Qualification Procedure for Aerospace Standard Products*

ISO 263, *ISO inch screw threads — General plan and selection for screws, bolts and nuts — Diameter range 0,06 to 6 in*

ISO 27874, *Metallic and other inorganic coatings — Electrodeposited gold and gold alloy coatings for electrical, electronic and engineering purposes — Specification and test methods*

MIL-HDBK-454, *General guidelines for electronic equipment*<sup>2</sup>

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 2591-100 apply.

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

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

<sup>1</sup> All parts quoted in this standard.

<sup>2</sup> Published by: DEFENSE LOGISTICS AGENCY DLA Land and Maritime (US), <https://landandmaritimeapps.dla.mil/Programs/MilSpec/DocSearch.aspx>.

## prEN 3646-001:2024 (E)

### 4 Description

#### 4.1 General

Different variants of materials, housings and contact arrangements are provided according to the models depending on the service conditions.

These connectors use crimp or solder contacts of size 20, size 16 and size 12.

The receptacles and plugs contain either male contacts or female contacts.

The contacts fitted in the model Y receptacles are exclusively of the male non-removable solder type.

The connectors are polarized by means of keyways and keys. When all the male contacts are in place, polarization is obtained by different angular positions of the insulator in relation to the main slot or locking key and shall occur before the coupling ring can carry out its function.

The visual check of coupling is obtained by viewing the locking pins through the inspection holes in the coupling ring of the plug.

#### 4.2 Receptacle

The receptacle may be attached by:

- square flange;
- nut, with sealing by O-ring at the attachment;
- round soldered or brazed flange for model Y connectors.

The receptacle contains five keyways in which the keys of the plug engage. The main keyway is fixed and is wider than the others. Polarization is ensured by the different angular positions of the inserts.

#### 4.3 Plug

The plug contains five keys which engage in the keyways of the receptacle. The main key is wider than the others. Polarization is ensured by the different angular position of the inserts.

The coupling ring permanently fitted on the plug enables the connectors to be coupled and uncoupled. The internal guides of the coupling ring may be treated with a suitable lubricant compatible with the performance required in this standard.

The plug of models RS and WS is fitted with a grounding spring device ensuring electrical continuity between the coupled connector housings.

#### 4.4 Materials and surface treatment

##### 4.4.1 General

When different metals are in close contact, adequate protection against corrosion shall be used for the electromotive force of the cell not to exceed 0,25 V according to EN 3197.

##### 4.4.2 Housings

The material of the housing for the connectors and for the fittings may either be passivated stainless steel or light alloy protected against corrosion by nickel, black anodized or cadmium plating according to EN 3646-002.



### 4.4.3 Contacts

Unless otherwise specified, the contacts shall be in ferrous alloy for models Y and in copper alloy for the other models.

They shall be gold-plated on an appropriate undercoat. Selective protection is authorized provided that it is sufficient to ensure that performance is respected.

Measurement of the thickness of the protective treatment shall be carried out in accordance with ISO 27874.

### 4.4.4 Non-metallic materials

The materials used for insert, seals and grommets shall have a hardness and mechanical and electrical characteristics consistent with the required use.

## 5 Design

### 5.1 Housings

The connector housings shall be in one unit. At the rear of the connector housing there shall be either three teeth at 120° intervals or teeth around the entire periphery. These teeth shall accommodate cable outlets or other fittings. The receptacle shall furthermore be fitted with an O-ring seal for sealing the coupled housings.

Receptacles for attachment by nut shall contain an O-ring seal. The nut shall have holes for the passage of locking wire.

The threads shall conform to ISO 263.

The coupling ring shall be designed so that the male and female contacts engage when it is turned clockwise and disengaged when it is turned counter-clockwise. The coupling ring shall be knurled.

The cable outlets shall compress the connector grommets without distorting it.

### 5.2 Inserts

The insert carrying the male and female contacts shall be in hard material and have a cross section and radii such that no cracks, flaking or breaks can occur in normal operation.

The insert for contacts shall be non-removable; it shall be mechanically held in the housing. Sealing shall be provided between the housing and insert.

The front face of the insert shall be such that sealing is ensured when the connectors are coupled. The interfacial seal of the insert of the male contacts shall be bonded on the hard insert.

The grommet shall permit sealing for all cable diameters indicated in EN 3646-002 and shall not be removable.

The mechanical contacts retention system shall be integrated in the hard insert.

The design of non-hermetic connectors shall permit individual installation of the contacts without removal of the insert or grommet. Insertion and removal of the contacts shall be from the rear, with the tools specified in the contact product standards.

**prEN 3646-001:2024 (E)****6 Definition drawings and masses****6.1 General**

The general dimensions and the masses of receptacles, plugs and protective covers are specified in the product standards.

**6.2 Receptacle mating dimensions**

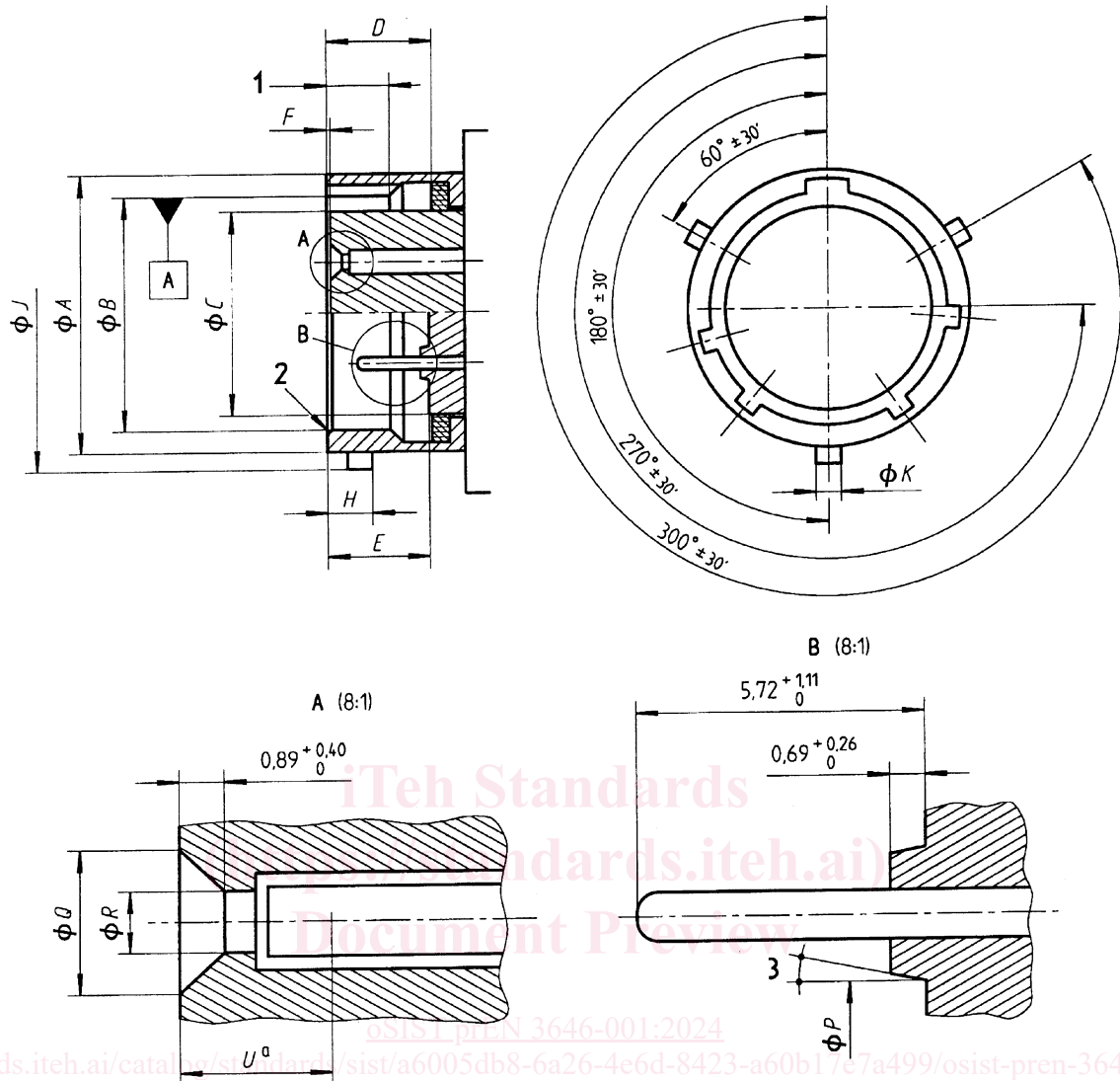
The mating dimensions of receptacles are shown in Figure 1 and details A and B as well as in Table 1, Table 2 and Table 3.

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Dimensions and tolerances in millimetres

**Key**

- 1 shells 08 to 18: 5 min.  
shells 20 to 24: 6 min.
- 2 radius or chamfer 0,2 mm to 0,381 mm
- 3  $7^\circ 30'$  to  $11^\circ 30'$
- a position of point of electrical contact

**Figure 1 — Receptacle**

## prEN 3646-001:2024 (E)

Table 1 — Receptacle — Mating dimensions

Housing size	A +0,02 -0,13	B +0,13 -0,02	C max.	D	E	F	H $\pm 0,18$	J 0 -0,4	K +0,15 -0,05
08	12,02	9,19	7,24	8,38	8,50	0,56	3,55	14,30	1,98
10	14,99	12,44	10,21					17,27	
12	19,05	15,41	13,11					21,82	
14	22,23	18,59	16,28					24,99	
16	25,40	21,76	19,46					28,14	
18	28,58	24,43	21,72					31,32	
20	31,75	27,61	24,89	9,98	10,10	2,13	34,49	3,18	
22	34,93	30,78	28,07				37,67		
24	38,10	33,96	31,22				9,60		9,70
							4,38		

Table 2 — Details A and B

Contact size	P	Q	R	U max.
20	2,29	2,44	1,50	3,68
	2,13 <sup>a</sup>	2,34 <sup>a</sup>		
	2,84	3,00	1,24	
	2,69	2,89		
16	3,66	3,81	2,06	3,94
	3,50	3,71	1,80	
12	5,18	5,33	2,84	
	5,03	5,23	2,59	
<sup>a</sup> See Table 3.				

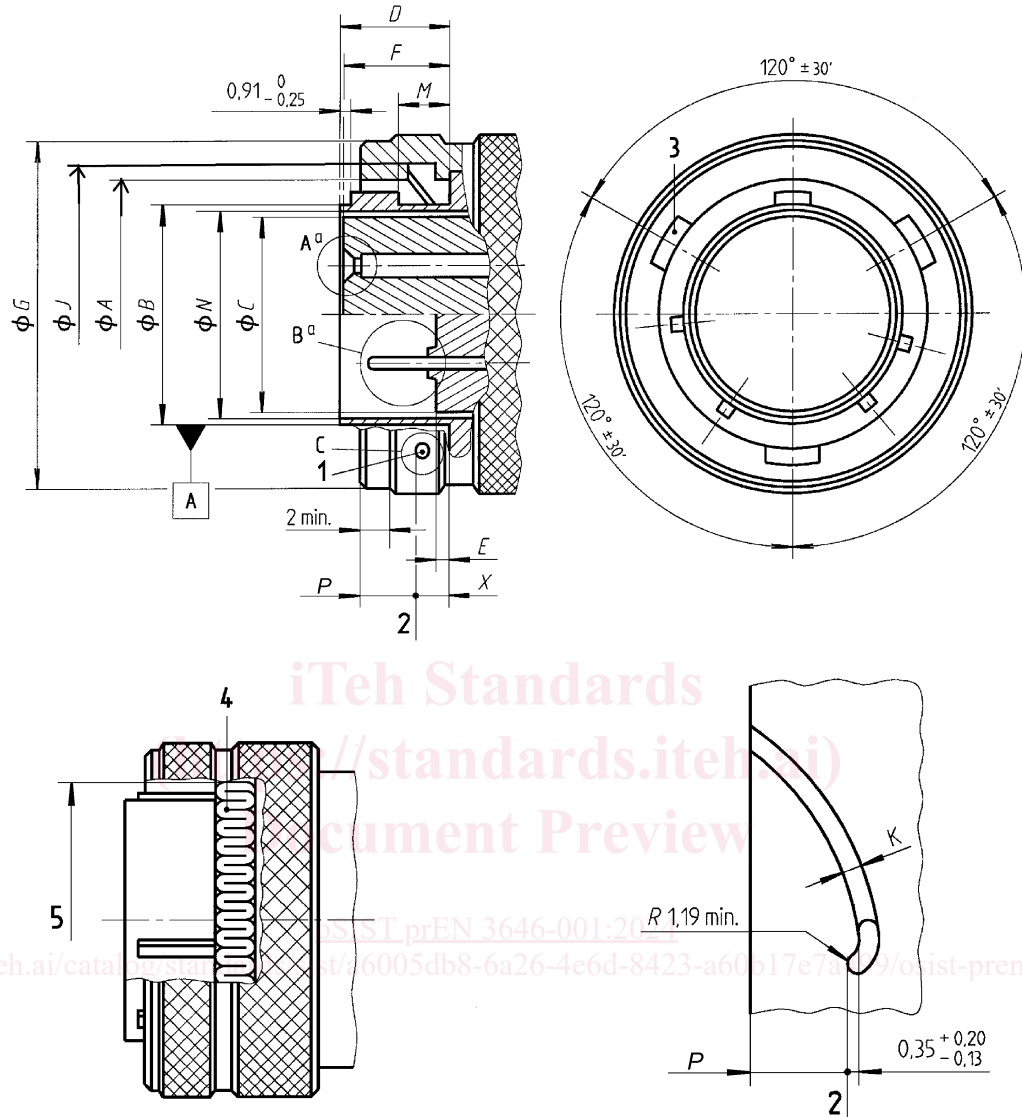
Table 3 — Reduced contact cavities

Housing size and contact arrangements	Reduced contact cavities
8 - 33	A, B, C
8 - 3A or 8 - 98	A, B, C
12 - 10	C, G
14 - 12	A, B, C, D, E, F, G, H
14 - 19	B, D, F, H, K, M
16 - 26	A, B, C, D, E, F, G, H, J, K, L, M, N, P, R
18 - 32	A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T
22 - 41	A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, U, V, W, X, Y

### 6.3 Plug mating dimensions

The mating dimensions of plugs are shown in Figure 2 and Figure 3 and in Table 4 and Table 5.

Dimensions and tolerances in millimetres



#### Key

- 1 Three mated connectors holes (design optional)
- 2 Reference. Locking point of the coupling ring.
- 3 Three bayonet grooves equally spaced within 0,13 with three holes equally spaced within 0,25 for visual inspection of coupling (see detail C).
- 4 Spring ground ring shall have at least six fingers per 25,4 mm of length.
- 5 Diameter  $L$  over spring finger
- C Coupling ring bayonet groove detail
- a See Figure 1.

NOTE Diameter C is applicable to female insulators only.

Figure 2 — Plug

Table 4 — Plug — Mating dimensions

Housing size	A	B	C	D	E	F	G	J	K	L	M	N	P	X		
	+0,10 -0,05	+0,05 -0,10	max.				max.	+0,13 -0,15	+0,39 -0,04	min.	max.	min.	max.	±0,51		
08	12,24	9,04	7,24	9,22	1,12	9,02	16,72	14,63	2,30	9,37	4,75	7,42	4,45	2,87		
10	15,32	12,29	10,21				19,79	17,70		12,62		10,39				
12	19,35	15,14	13,11				23,70	22,12		15,60		13,28				
14	22,50	18,31	16,28				27,40	25,27		18,77		16,46				
16	25,68	21,49	19,46				30,53	28,44		21,95		19,61				
18	28,88	24,03	21,72				33,30	31,62		24,61		21,89				
20	32,03	27,20	24,89	10,78	2,70	10,59	37,45	34,79	2,30	27,79	5,54	25,07	4,75	2,87		
22	35,20	30,38	28,07				10,56	2,26		10,13		40,45	37,97		30,96	28,22
24	38,38	33,55	31,22				10,56	2,26		10,13		43,40	41,25		3,50	34,14

### 6.4 Receptacle and plug polarization

According to Figure 3, Figure 4 and Figure 5 and Table 5 and Table 6.

Dimensions and tolerances in millimetres

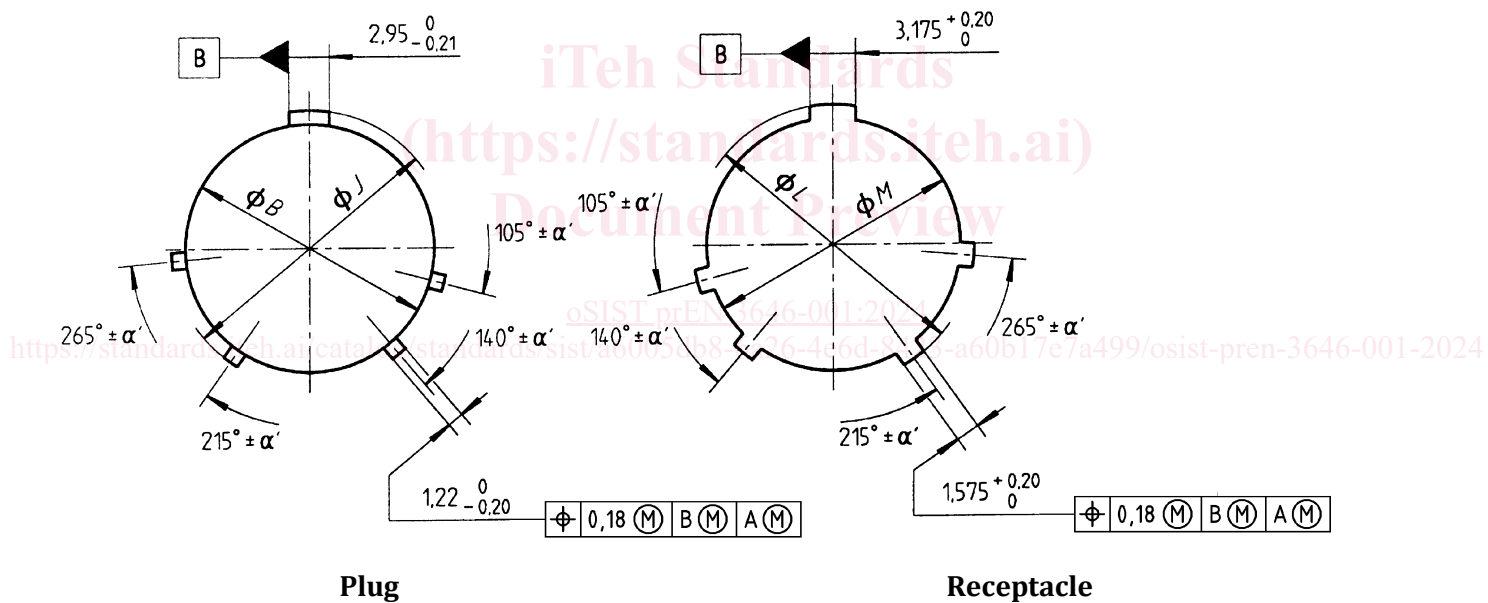


Figure 3 — Polarization