

Specification for

Separable insulated cable connector system above 1 kV and up to 36 kV

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- Aluminium Federation
- Association of Consulting Engineers
- Association of Manufacturers of Domestic Electrical Appliances
- British Approvals Service for Electric Cables
- British Cable Makers' Confederation
- British Plastics Federation
- British Railways Board
- British Shipbuilders
- British Steel Industry
- British Telecommunications plc
- Department of the Environment (Property Services Agency)
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- ERA Technology Ltd
- Electricity Supply Industry in England and Wales
- Engineering Equipment and Materials Users' Association
- Institution of Electrical Engineers
- London Regional Transport

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd)
- Department of Transport
- Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd)
- Institution of Lighting Engineers
- Ministry of Defence

This British Standard, having been prepared under the direction of the Cables and Insulation Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 29 June 1990

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Foreword

This British Standard has been prepared under the direction of the Cables and Insulation Standards Policy Committee at the request of the Electricity Supply Industry and the British Electrotechnical and Allied Manufacturers' Association in view of the increasing use of separable insulated cable connector systems in the UK.

The equipment covered by this standard is designed to facilitate the connection of cables to plant such as transformers, switchgear and rotating machines. The connector is fully insulated, but the components can be readily separated for operational reasons such as testing and replacement of cables or plant.

A number of proprietary systems are in existence which comply with two existing standards: one American National Standard and one French user Standard¹⁾. The dimensions defined in this standard are based on the established practice contained in the overseas standards.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people, for whose use it has been prepared.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ See list of publications on the inside back cover.

1 Scope

This British Standard specifies requirements for construction, and describes methods of test, for dead-break separable insulated cable connector systems rated above 1 kV and up to and including 36 kV, for use on power distribution systems. The separable connectors are specified for use with bushings rated from 250 A to 1 250 A.

This standard establishes the essential dimensions of the interface between the different ratings of separable connectors and the corresponding bushing of the equipment to be connected. The electrical connection may be achieved either by a bolted joint or a sliding contact.

Bushings intended for use with separable connectors shall comply in all relevant respects with BS 223 except where the requirements of that standard are modified by any standard relating to the equipment in which such a bushing is designed to be used. In addition, tests of the combination of the separable connector and its related bushing are specified, in order to prove aspects of their performance which cannot be proved by testing the components separately.

Components which allow for the connection of more than one cable to a single bushing are also included.

This standard does not cover separable connector systems for use in exposed outdoor conditions. Neither does it cover live-break separable insulated cable connector systems, nor give guidance on the necessity of earthing cable terminations and equipment during disconnection.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard, the definitions given in BS 4727-2:Group 08 apply, together with the following.

NOTE Figure 1 and Figure 2 show typical components of separable insulated connectors. The term connector as used in this standard means separable insulated connector.

2.1 separable connector

an insulated device secured to the end of a cable, incorporating a female interface in accordance with one of the interfaces given in this standard which engages with a bushing on the equipment to be connected. This may or may not enclose or form part of the cable termination. The bushing carries the appropriate male interface to make a sealed joint with the connector

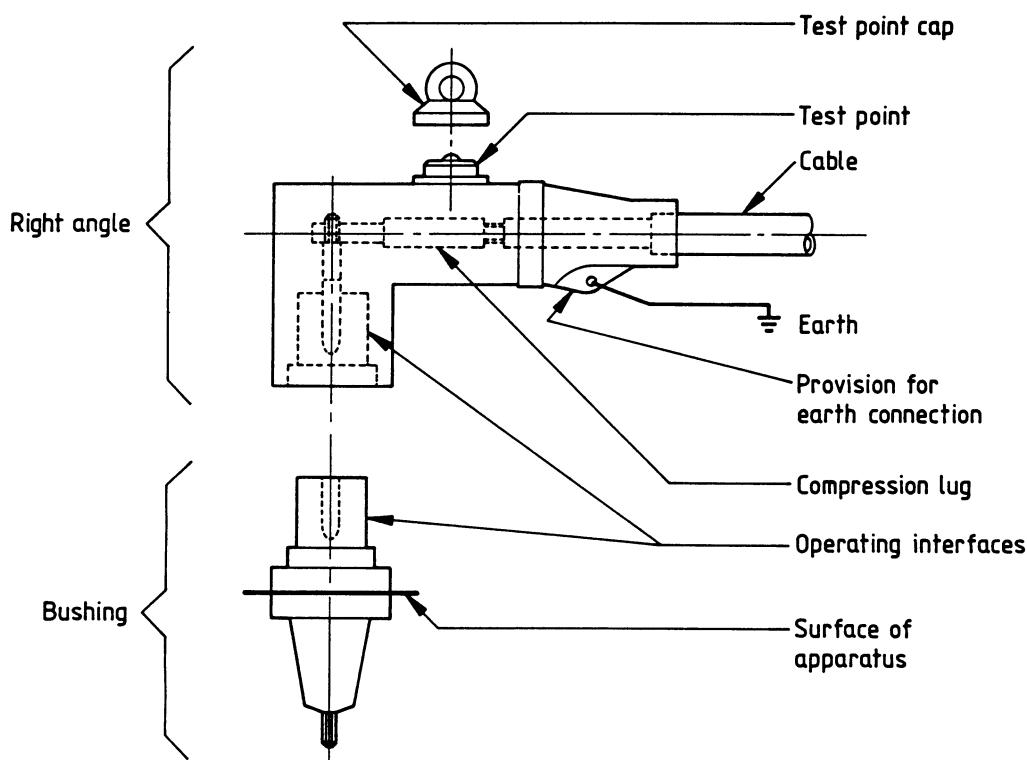


Figure 1 — Typical components of type A non-extensible separable insulated connector system

2.2**plug-in separable connector**

a separable connector in which the electrical contact is made by sliding contact, comprising a male contact in the connector and a female contact in the bushing

2.3**bolted separable connector**

a separable connector in which the electrical contact to the bushing conductor is made by a bolted joint

2.4**in-line separable connector**

a plug-in separable connector system in which the male contact is directly in line with the cable and connects in an axial manner with the bushing

2.5**right-angle separable connector**

a separable connector system in which the axes of the cable and the bushing are at right-angles

2.6**screened separable connector**

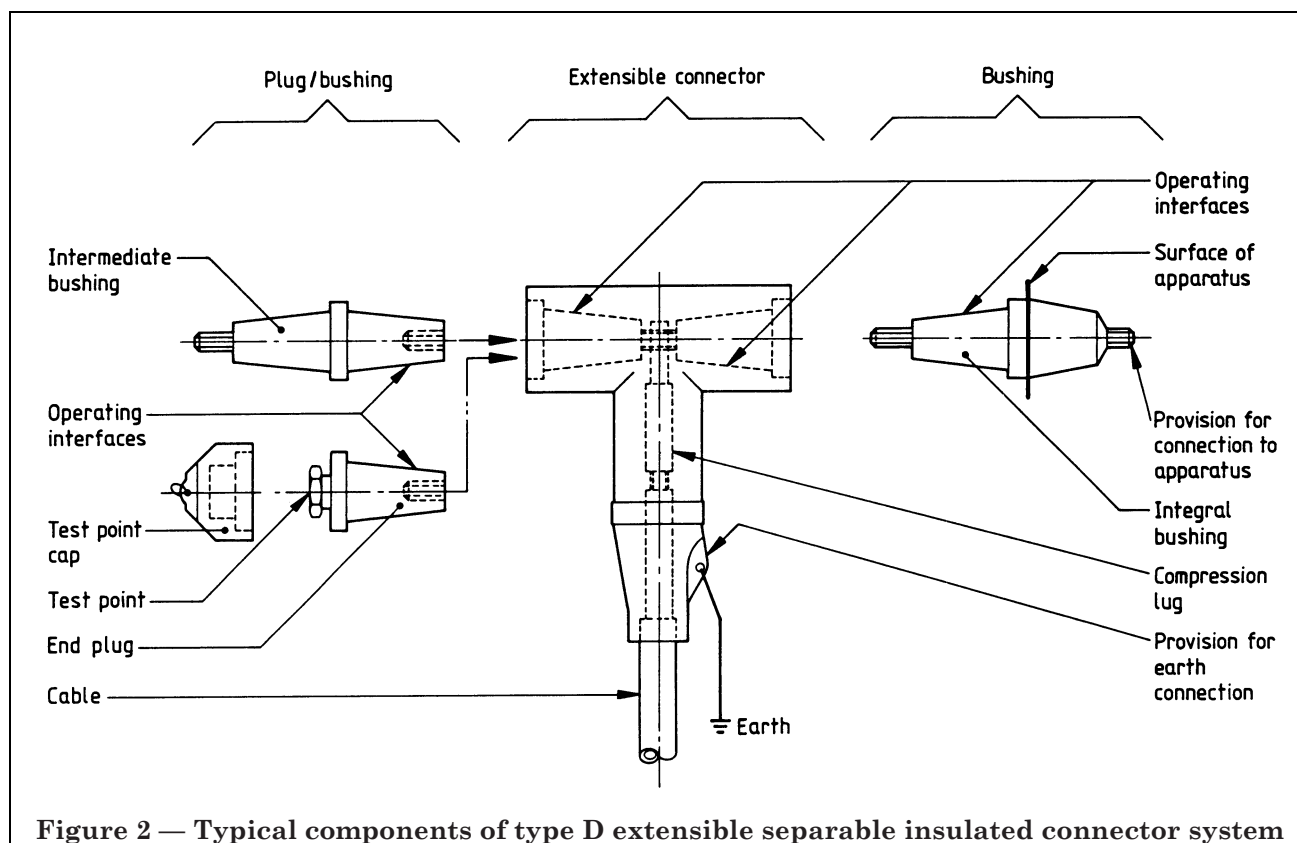
a separable connector which has its external surfaces covered with a semi-conducting material

2.7**unscreened separable connector**

a separable connector which does not have an external conducting screen

2.8**extensible connector**

a separable connector that has provision for other separable connectors to be connected to it in order that two or more cables may be connected in parallel



2.9**non-extensible connector**

a separable connector that has no provision for further separable connectors to be connected to it

2.10**internal cable terminations**

a term applied to separable connectors that contain all the necessary features for terminating the cable within the insulation of the separable connector

2.11**external cable terminations**

a term applied to separable connectors that make no provision for terminating the cable other than a connection to which the cable conductor fitting is bolted

2.12**bushing**

a structure carrying one or several conductors through a partition such as a wall or tank, etc., and insulating it or them therefrom, incorporating the means of attachment (flange or other fixing device) to the partition

the conductor may form an integral part of the bushing or be drawn through

2.13**intermediate bushing**

a bushing intended to permit the connection of two bolted, extensible separable connectors, not necessarily of the same type, so that two (or more) cables can be connected to the equipment and the earth screen, where provided, can be continued over the assembly

2.14**securing device**

an externally mounted device used with plug-in separable connectors to prevent separation at the interface between the connector and its related bushing

2.15**test point**

a terminal coupled by capacitance to the main conductor for use with voltage sensing devices (see Figure 1 and Figure 2)

2.16**dead-break connector**

a connector designed to be separated and engaged on de-energized circuits only

2.17**end plug**

a plug used to close the open orifice at the end of the last separable connector of a number of interconnected connectors or single connector as applicable

3 Voltage designation

The separable connectors are designated by the rated voltage U_o and U , expressed in the form U_o/U , and the value of U_m where:

U_o relates to the power frequency voltage to earth for which the separable connector is suitable;

U relates to the power frequency between conductors for which the separable connector is suitable; and

U_m is the maximum sustained power frequency voltage between conductors for which the separable connector is suitable.

The rated voltages U_o/U of the separable connectors included in this standard are:

6 350/11 000 V ($U_m = 12$ kV)

12 700/22 000 V ($U_m = 24$ kV)

19 000/33 000 V ($U_m = 36$ kV)

4 Environmental conditions

The separable connector system shall be suitable for use under the following environmental operating conditions.

a) Ambient air: within the range $-25\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$.

b) Altitude: up to and including 1 000 m above sea level.

c) Humidity, pollution and vibration: as BS 6581:1981 sub-clauses 2.1 and 2.2.

In the absence of any specified environmental conditions applying to the equipment on which the bushing is fixed, the conditions of clauses 15 to 17 of BS 223:1985 shall apply to the separable connector systems.

5 Classification and ratings**5.1 Classification**

This standard covers the requirements of dead-break separable insulated cable connector systems with internal terminations, classified as types A, B, C, D and E and external cable as given in Table 1.

NOTE For current ratings see Table 5.