

Specification for

**Design and
performance
requirements for
airframe-fit electrical
connectors for d.c. and
low frequency a.c.
applications**

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Aerospace Standards Committee (ACE/-) to Technical Committee ACE/6, upon which the following bodies were represented:

- BEAMA Ltd.
- British Rubber Manufacturers' Association
- Civil Aviation Authority
- Electric Cable Makers' Confederation
- Electronic Components Industry Federation
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Limited
- British Airways

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Foreword

This revision of this British Standard, having been prepared under the direction of the Aerospace Standards Committee, specifies requirements for the design of connectors shown by experience to be necessary for aerospace use.

Airframe-fit electrical connectors were introduced into the BS 9000 series of standards by the publication of BS 9540 in 1983 which covered their design, performance and testing. It has now been decided to withdraw BS 9540 and to include airframe-fit connectors in BS 9520 which covers their qualification approval and production acceptance tests. British Standard G 202 has been revised to specify the design and performance requirements for airframe-fit connectors, thus keeping them under the full control of the relevant Aerospace Technical Committee. This revision supersedes British Standard G 202:1968 and BS 9540:1983, which are withdrawn.

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, 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 Scope

This British Standard specifies design and performance requirements for airframe-fit electrical connectors, including engine connectors, for d.c. and low frequency a.c applications. It applies only to connectors complying with BS 9520. Appendix A gives information that enables the manufacturer to prepare the required declaration of design and performance for submission to the appropriate design authority.

NOTE 1 This specification has to be used in conjunction with detail specifications prepared in accordance with the airframe-fit requirements of BS 9521, BS 9522 and BS 9523. Generic data and methods of test are given in BS 9520.

NOTE 2 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 9520 apply.

3 Classification

Connectors shall be classified as follows:

- Class S: barrier sealed (unmated) to a maximum leakage rate of $1 \text{ cm}^3/\text{h}$ at 1 atmosphere;
- Class H: hermetically sealed (unmated) to a maximum leakage rate of $1 \times 10^{-7} \text{ cm}^3/\text{s}$ at a differential pressure of 1 atmosphere;
- Class N: an environmentally resistant connector, which although complying with **1.2.6.12** (climatic sequence) and **1.2.6.13** (immersion at low air pressure) of BS 9520:1983 may not contain an integral barrier seal;
- Class K: a connector with the characteristics defined for class N and complying with **1.2.6.10** of BS 9520:1983;
- Class U: unsealed.

NOTE 1 A second letter denoting a particular combination of upper temperature category and housing finish or upper temperature category and seal material may be included as prescribed in the detail specification.

The preferred temperature categories are:

- 40 °C to 105 °C
- 65 °C to 175 °C
- 65 °C to 200 °C
- 65 °C to 260 °C
- 65 °C to 350 °C

NOTE 2 See also **6.8**.

NOTE 3 Standard atmospheric pressure is equivalent to between 860 mbar and 1 060 mbar (1 mbar = $100 \text{ N/m}^2 = 100 \text{ Pa}$).

4 Materials and finishes

Materials and finishes shall be as specified by the control drawing or drawings, prepared by the manufacturer in accordance with BS 9520 and shall comply with the performance requirements of the detail specification. However, where the materials and finishes are not specified, they shall be selected so that they comply with the performance requirements of the detail specification, prepared by the manufacturer in accordance with BS 9520. Dissimilar metals shall not be used in intimate contact unless protection is afforded to prevent corrosion.

5 Environmental requirements

5.1 General

The connectors and their accessories (excluding contact insertion/removal and unwired contact removal tools) shall comply with the performance requirements specified in the detail specification when subjected to any one or any natural combination of the conditions specified in **5.2**, **5.3**, **5.4**, **5.5**, **5.6** and, if applicable, **5.8**.

NOTE Connectors complying with this standard are not explosion-proof in accordance with BS 4683 and should not therefore be disengaged when carrying current in explosive atmospheres. However, correctly engaged (mated) connectors and their accessories should not normally constitute an explosive hazard in such atmospheres.

5.2 Temperature category

Electrical connectors shall be capable of operating at their upper temperature category for a period of 1 000 h continuously.

The upper temperature is the maximum internal hot spot temperature resulting from any combination of electrical load and ambient temperature.

5.3 Altitude

Electrical connectors shall be suitable for operation at altitudes from – 300 m to not less than + 21 500 m.

5.4 Vibration

Connectors shall be tested in accordance with the appropriate category of vibration test, as follows:

- a) for military applications the sinusoidal excitation procedure shall be used and the connectors shall comply with **1.2.6.3.2.2** of BS 9520:1983;
- b) for civil applications the random motion excitation procedure shall be used and the connectors shall comply with **1.2.6.3.2.3** of BS 9520:1983;