

Crimped joints for aircraft electrical cables and wires —

**Part 1: Specification for design
requirements (including tests) for
components and tools**

Committees responsible for this British Standard

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- British Airways
- British Cable Makers' Confederation
- British Rubber Manufacturers' Association
- Civil Aviation Authority (Airworthiness Division)
- Electronic Components Industries Federation
- Ministry of Defence
- Society of British Aerospace Companies Ltd.

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Foreword

This British Standard, prepared under the direction of the Aerospace Standards Policy Committee, provides details of the requirements aircraft constructors and operators for crimping connections for electrical cables for aircraft. The standard is published in separate Parts; Part 1 relates to the design requirements and tests for the manufacture of terminal ends, connector contacts, cable splices and their associated crimping tools and Part 2 relates to user control tests for crimped joints.

This Part is a revision of BS 4G 178:1984 which is withdrawn. The principal changes introduced by this revision are a modification of the load/temperature cycling test, with emphasis on the stability of the crimped joint during the final stages of the test, and the addition of a low air pressure test for sealed splices. Minor modifications and corrections to the text have been made and some performance data for size 28 and 30 conductors have been included in Table 1 at the request of industry.

Reliable data for crimps on nickel plated conductors are not at present available for inclusion in this revision.

Testing of crimped joints to assess their suitability for aircraft shows that certain environmental conditions, e.g. vibration, have no significant effect on the performance the joints. It has, therefore, not been considered necessary to provide for such tests in the specification.

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 10, 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 Part of BS 5G 178 specifies the design requirements and tests for components and tools for the crimping of insulated and non-insulated terminals and splices to general purpose electrical cables or equipment wires for aircraft with conductors of copper, copper alloy, aluminium or aluminium alloy, in locations in which the stabilized conductor temperature does not exceed the value specified for the relevant type of cable.

Tests for the components, tools and crimped joints are described in Annex A.

NOTE The latest revision or new edition of an Aerospace Series standard is indicated by a prefix number.

2 Normative references

This Part of BS 5G 178 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back page. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 5G 178 only when incorporated in it by updating or revision.

3 Definitions

For the purposes of this Part of BS 5G 178 the following definitions apply.

3.1 crimping

the physical compression or deformation of a conductor barrel or ferrule around a conductor in order to make a mechanical and electrical connection

3.2 crimped joint

a permanent connection formed by crimping a terminal end, connector contact or cable splice onto electrical conductors

3.3 terminal end

a device with barrel(s) accommodating electrical cable conductor(s) with or without additional provision to accommodate and support the conductor insulation, for connecting conductor(s) to equipment

3.4 connector contact

a contact used in a fixed or free connector with a barrel at one end to accommodate an electrical cable conductor with or without additional provision to support the conductor insulation

3.5 cable splice

a device with barrel(s) accommodating electrical cable conductor(s) with or without additional provision to accommodate and support the conductor insulation for connecting conductors

3.6 insulation support

that part of a terminal barrel or cable splice barrel which supports the conductor insulation

3.7 pre-insulated joint

a crimped connection formed with an insulated terminal end or insulated cable splice

3.8 post-insulated joint

an insulated crimped connection insulated after conductor crimping

3.9 crimping tool

a manually or power operated mechanical device for crimping and, where required, reforming the insulation support

3.10 positioner

a locator turret or other device permanently or removably attached to a crimping tool serving correctly to locate and control the position of the crimp on the barrel

3.11 flash

material of the barrel or socket of a crimped joint extruded between the edge of the dies in a crimping tool during the crimping operation

3.12 cable and wire

a single-core electric cable or wire or an individual core of a multi-core cable or wire

4 Components

4.1 Where installation conditions are suitable, terminal ends and cable splices shall conform to BS G 204:1967, and connector contacts shall conform to BS 9521:1983. Where installation conditions make it impossible to use terminal ends, cable splices or connector contacts conforming to these standards, any deviations shall be declared in the declaration of design and performance (see 4.5).