

OBSOLESCENT
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Specification for

Cartridge fuses for aircraft —

Part 4: Cartridge Fuse-Links (Type C)

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Foreword

Cartridge fuse-links complying with this Part of BS G 176 are suitable for use in nominal 28 volt d.c. aircraft electrical systems having prospective fault currents and time-constants at the location of the fuse not exceeding the values given in Table 1. Within these limitations the fuse-links are intended to satisfy British Civil airworthiness requirements for a device giving protection against system short-circuits faults only.

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 13 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.

Amendments issued since publication

Amd. No.	Date of issue	Comments
4107	November 1982	Indicated by a sideline in the margin

This British Standard, having been approved by the Aircraft Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council of the Institution on 7 November 1962

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The following BSI references relate to the work on this standard:
Committee reference ACE/43
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Contents

	Page
Foreword	Inside front cover
1 Scope	1
2 General requirements	1
3 Dimensions	1
4 Temperature and altitude ratings	1
5 Voltage, current ratings and breaking-capacity rating	1
6 Time/current characteristics	1
7 Tests	1
8 Type tests	1
9 Production routine tests	1
10 Production quality tests	1
Appendix Envelope curves of time/current characteristics of fuse-links	4
Figure 1	3
Figure 2 — 35 amp.	4
Figure 3 — 50 amp.	5
Figure 4 — 80 amp.	6
Figure 5 — 100 amp.	7
Figure 6 — 130 amp.	8
Figure 7 — 150 amp.	9
Figure 8 — 200 amp.	10
Figure 9 — 225 amp.	11
Figure 10 — 275 amp.	12
Figure 11 — 325 amp.	13
Figure 12 — 350 amp.	13
Figure 13 — 400 amp.	13
Figure 14 — 500 amp.	13
Table 1 — Ratings of fuse-links	2
Table 2 — Dimensions of fuse-links	3

Obsolescent (by Amendment No. 1)

The need for the equipment covered by this British Standard has been reviewed and it has been decided that, in the interests of rationalization, it should be regarded as obsolescent and not therefore used for new designs. The standard will be withdrawn in due course.

1 Scope

This Part of BS G 176 specifies the requirements for the dimensions and performance of a particular range of aircraft cartridge fuse-links (Type C), variously known as the “air fuse” or “current limiter”.

2 General requirements

The fuse-links shall comply with the requirements of Part 1 of this British Standard unless otherwise stated in this Part.

3 Dimensions

The dimensions of the fuse-links shall be in accordance with those shown in Figure 1.

4 Temperature and altitude ratings

The fuse-links shall be suitable for use at all ambient temperatures from -65°C to $+70^{\circ}\text{C}$ and at all altitudes up to 60 000 ft (18 300 m).

5 Voltage, current ratings and breaking-capacity rating

The fuse-links shall be suitable for use at a nominal voltage of 28 volts d.c. The current ratings and breaking-capacity rating shall be in accordance with those listed in Table 1. The breaking-capacity rating is related to a substantially non-inductive circuit with a time constant of the value shown in Table 1.

6 Time/current characteristics

The time/current characteristics of the fuse-links shall be within the envelope curves shown in the Appendix.

7 Tests

The fuse-links shall be tested as specified below in accordance with the principles of Part 1, Section 2, Clause 14.

8 Type tests

a) The fuse-links shall be tested in accordance with Part 1, Section 2, as follows:

Clause 15. Preliminary tests

Clause 16. Batch tests — samples for other tests as required

Clause 18. Vibration tests

Clause 19. Acceleration tests

Clause 20. Climatic cycling test

Clause 23. Temperature rise tests

Clause 25. Minimum fusing current

Clause 26. Time/current characteristics

Clause 27. Crash landing

Clause 28. Endurance tests — except that the temperature shall be $+70^{\circ}\text{C}$

Clause 30. Mould growth tests

Clause 31. Tropical exposure tests

b) One fuse-link of each rating shall be subjected to an ambient temperature of $+70^{\circ}\text{C}$ for a period of one hour whilst carrying 80 per cent of the normal rated current. The sample shall then be transferred immediately to an ambient temperature of -65°C for a further period of one hour without carrying current. After returning to normal ambient temperature there shall be no evidence of cracking, loosening of parts or other damage to the fuse-link.

c) The fuse-links shall be subjected to breaking capacity tests in accordance with Clauses 19, 20 and 21 of BS 88 in a test circuit having a time constant of 0.005 to 0.006 second.

The fuse-links shall be deemed not to comply with this British Standard if during these tests one or more of the following occur:

i) Melting of the fine-wire fuse, indicating arcing to the metal case.

ii) Ignition of the fuse or damage of neighbouring apparatus, including the fuse-link terminations.

iii) Loosening or detachment of the transparent face from the body of the fuse-link, or, in the event of cracking of the transparent material, the detachment of any splinters or pieces.

9 Production routine tests

The fuse-links shall be tested in accordance with the requirements of Part 1, Section 2, Clauses 32 to 34, of this British Standard.

10 Production quality tests

a) Samples of fuse-links, selected in accordance with Part 1, Section 2, Clause 35, of this British Standard, shall be subjected to the test described in b). The results of the test shall be interpreted as specified in Part 1, Section 2, Clause 38.

b) For each current rating of fuse-link the prospective current at which blowing should occur in three seconds shall be determined from the mean time/current characteristic. Passage of this current through the sample fuse-links shall result in the melting of the fuse-element in a time which lies within the envelope time/current characteristic. Upon subsequent inspection there shall be no evidence of cracking, loosening of parts or other damage to the fuse-link.

Table 1 — Ratings of fuse-links

1	2	3	4	5	6	7
Continuous current rating		Breaking capacity rating	Time constant of test circuit	Duration of test for minimum fusing current	Cable to be used during tests	
– 65 °C to + 35 °C	+ 35 °C to + 70 °C				BS E 21	BS G 177
amp	amp	amp	second	hours		
35	28	2 500	0.005 to 0.006	1½	Unipren 35	Uninyuin 10
50	40	2 500			Unipren 50	Uninyuin 8
80	64	3 000			Unipren 70	Uninyuin 6
100	80	3 000			Unipren 100	Uninyuin 4
130 ^a	104	3 000			Unipren 135	Uninyuin 2
150	120	3 000			Unipren 150	Uninyuin 1
200 ^a	160	3 000			Unipren 200	Uninyuin 00
225	180	3 000			Unipren 230	Uninyuin 000
275 ^a	220	3 000			Unipren 280	Uninyuin 0000
325	260	3 000			Unipren 280	Uninyuin 0000
350 ^a	280	3 000			2 × Unipren 170	2 × Uninyuin 0
400 ^a	320	3 000			2 × Unipren 200	2 × Uninyuin 00
500	400	3 000			2 × Unipren 230	2 × Uninyuin 000

^a Non-preferred ratings.