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Specification for

Aluminium terminal ends and in-line connectors for hexagonal crimping to aircraft aluminium electrical cables

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Foreword

These British Standards have been prepared at the request of the aircraft industry to provide for a range of aluminium terminal ends and in-line connectors for use with aircraft electrical cables with aluminium conductors. The lugs with an insulation bucket are principally intended for use on Tersilal cables which are terminated in zones where they may be contaminated by kerosene or other fluids, but where the stabilized conductor temperature does not exceed 105 °C.

The standard requires reference to the following specifications:

British Standards.

BS A 125–BS A 168 etc., *Stiffnuts (Unified threads) for aircraft.*

BS E 21, *Pren type electric cables for aircraft.*

BS G 177, *Nyvin type electrical cables for aircraft.*

BS G 178, *Crimped joints (non-insulated) for general purpose electrical cables for aircraft.*

BS G 189, *Tersil type electrical cables for aircraft.*

BS L 34, *99 per cent aluminium bars, rods and sections.*

BS 245, *White spirit.*

BS 479, *Coal-tar naphthas.*

BS 580, *Trichloroethylene.*

BS 969, *Plain limit gauges: limits and tolerances.*

BS 3410, *Metal washers for general engineering purposes.*

Ministry of Aviation Specification.

D.T.D. 924, *Electrodeposited tin coatings.*

NOTE The figures in British units are to be regarded as the standard. A table to assist in the conversion of inch values to approximate millimetre equivalents is given in Appendix E. More accurate conversions should be based on the tables in BS 350, "Conversion factors and tables".

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 The standard will be withdrawn in due course.

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 17 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

These British Standards relate to aluminium terminal ends and in-line connectors suitable for crimping to aircraft electrical cables with aluminium conductors in locations in which the stabilized conductor temperature does not exceed 105 °C. When crimped hexagonally to the dimensions specified in Table 8 and Table 9, the terminal ends and in-line connectors will satisfy the performance requirements of BS G 178 on the following types of cable: Prenal (BS 2E 21), Nyvinal (BS G 177), and Tersilal (BS G 189).

Two series each of terminal ends and in-line connectors are included for crimping the conductor only and for crimping conductor and dielectric respectively.

Recommendations for the installation of the connections are given in Appendix A.

2 Definitions

For the purposes of these British Standards the definitions in BS G 178 shall apply.

Section 1. Terminal ends and in-line connectors

3 Materials

The terminal ends and in-line connectors shall be made from material complying with BS L 34.

4 Dimensions

The dimensions of the terminal ends and in-line connectors shall comply with Table 2, Table 3, Table 4 or Table 5, as appropriate.

5 General finish

- a) The palm surfaces of the terminal ends shall be machined flat and parallel within 0.004 in (0.1 mm) total indicator reading before plating.
- b) Stud holes shall be slightly chamfered to remove burrs and rough edges.

6 Surface finish

- a) The external surfaces of the terminal ends and in-line connectors shall be coated with tin to a minimum average thickness of 0.001 in by the acid stannous sulphate process in accordance with the latest issue of Ministry of Aviation process specification D.T.D. 924. The bore of the crimping barrel shall not be coated.
- b) Unless otherwise agreed with the Approving Authority¹⁾, the terminal ends and in-line connectors shall be prepared for tin coating by the process described in Appendix B.
- c) After coating, the terminal ends and in-line connectors shall comply with the relevant requirements of BS G 178.

7 Inhibitors

For the purpose of preventing ingress of moisture and possible reoxidation after crimping, all terminal ends and in-line connectors shall be filled by the manufacturer with an inhibiting compound and subsequently sealed for transit and storage purposes. Details of a suitable compound are given in Appendix C.

8 Inspection

- a) The terminal ends and in-line connectors shall be inspected for compliance with the approved drawings, and shall be free from harmful defects.
- b) Although they may have been made from material passed previously for chemical composition and mechanical properties, terminal ends and in-line connectors showing imperfections may be deemed not to comply with these British Standards.

9 Identification

The terminal ends and in-line connectors shall be identified on drawings and for ordering purposes by the relevant BS number as shown in Table 1, together with the appropriate part number given in Table 2 to Table 5. For example:

- a terminal end without insulation support for Prenal 100 or Nyvinal 2 cable, suitable for connection to a $\frac{5}{16}$ in stud, is BS G 184/2-BS G.
- an in-line connector with insulation support for Prenal 100 or Nyvinal 2 cable is BS G 188/2.

¹⁾ For terminal ends and in-line connectors for aircraft subject to British civil or military airworthiness requirements, the Approving Authorities are the Air Registration Board (through a design authority approved by the Board), and the Ministry of Aviation, respectively.

Table 1 — British Standard numbers for aluminium terminal ends and in-line connectors for crimping to aircraft aluminium electrical cables

BS No.	Type of terminal end or in-line connector	Dimensions
BS G 184	Terminal ends without insulation support	Table 2
BS G 185	Terminal ends with insulation support	Table 3
BS G 186	Double-hole terminal ends without insulation support	Table 4
BS G 187	In-line connector without insulation support	Table 5
BS G 188	In-line connector with insulation support	

10 Marking

- Terminal ends and in-line connectors shall be durably and legibly marked with the letters “AL”, the cable size number as shown in the appropriate part number in Table 2 to Table 5 (e.g. AL/2), and the manufacturer’s identification.
- The identification marking shall not be applied to the electrical contact area on the palm, i.e. within the subscribed diameter of the palm, of terminal ends, nor to any part of the crimping barrel subject to deformation upon crimping.

Section 2. Crimping

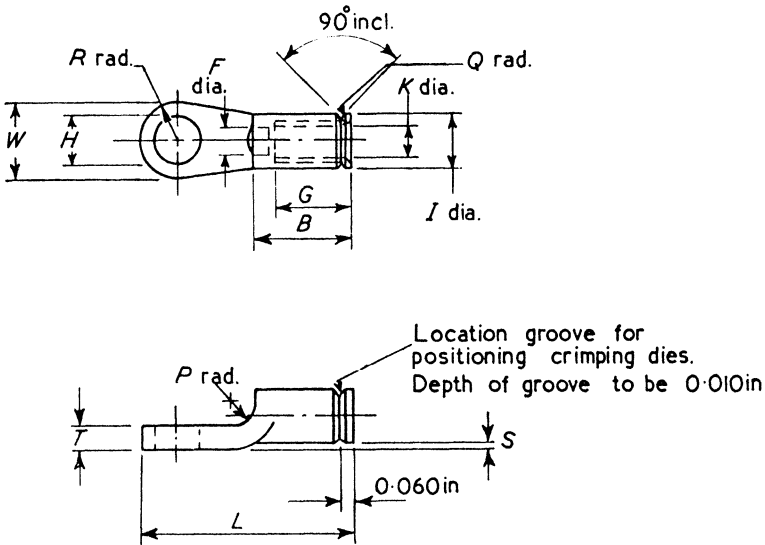
11 Dimensions

- The dimensions of dies used for hexagonal crimps shall be as shown in Table 6 and Table 7.
- For hexagonal crimps, the dimensions of the crimped portion of the lugs shall be in accordance with Table 8 and Table 9. Dimensions for gauges for crimped barrels and for crimped insulation buckets are shown in Table 10 and Table 11.

12 Marking

The marking required by Clause 8 of BS G 178 shall be the cable size and the tool manufacturer’s identification.

Table 2 — Aluminium terminal ends without insulation support (BS G 184)



Third Angle Projection

Figure 1

Part number	Cable size ^a	H		B		F dia.	G		I dia.		K dia.	L		P rad.	Q rad.	R rad.	S		T		W	
		dia.	Stud size	max.	min.		max.	min.	max.	min.		max.	min.	nom.	nom.	nom.	max.	min.	max.	min.	max.	min.
8-C	AL.8	0.196	in No. 10-32 UNF	0.630	0.610	0.166 (4.2 mm drill)	0.500	0.480	0.269	0.265	0.166 (4.2 mm drill) Tap 10-32 UNF	1.435	1.415	0.12	0.032	0.284	0.040	0.020	0.125	0.115	0.572	0.562
8-E		0.261	1/4									1.635	1.615								0.760	0.750
8-G		0.323	5/16									1.635	1.615								0.760	0.750
8-J		0.397	3/8									1.760	1.740								1.010	1.000