

Chapter 3HIGH TENSION IGNITION CABLES FOR PISTON ENGINES

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Introduction

1 Two types of aircraft single core, high tension (HT) ignition cables are currently in service for use with piston engined aircraft; these are uniplugsheath and uniplughitemp. Uniplugsheath cables are round and manufactured with a core comprising a stranded stainless steel conductor covered by a vulcanised rubber insulator which in turn is covered by waterproofed cotton braiding; the core is enclosed by a non-combustible sheath of black polychloroprene. These cables, dependent on cable size, are designed for use in HT ignition circuits as specified in the relevant servicing publication. For example, Uniplugsheath No 1 can withstand operating temperatures up to 120 °C and Uniplugsheath No 4 can withstand temperatures up to 140 °C.

2 Uniplughitemp cables are round and manufactured with a core comprising a standard conductor of nickel plated copper, covered with an insulating sheath of black PTFE (polytetrafluoroethylene). It is suitable for use at temperatures between -55 °C and +260 °C and has a maximum voltage rating of 4 kV d.c. The PTFE insulation has low surface creep and does not crack when flexed at a temperature of -55 °C; it is resistant to fuels, petroleum and ester based oils, hydraulic and de-icing fluids, fire extinguishing liquids and cleaning solvents. PTFE does not support combustion.

WARNINGS

- (1) PTFE MUST BE TREATED WITH THE GREATEST CARE.
- (2) PTFE WILL GIVE OFF TOXIC FLUORIDE GAS IF HEATED TO TEMPERATURES GREATER THAN 200 °C DURING PROCESSES SUCH AS DRILLING, WELDING OR SOLDERING. PTFE WIRES MUST THEREFORE BE PREPARED ONLY IN WELL VENTILATED ROOMS AWAY FROM OTHER PERSONNEL AND WHENEVER POSSIBLE IN A ROOM FITTED WITH AN EXHAUST VENTILATION SYSTEM.
- (3) NO SMOKING, EATING OR DRINKING IS TO BE PERMITTED BY PERSONNEL WHILST ENGAGED IN STRIPPING, SOLDERING OR OTHERWISE WORKING WITH PTFE. SUCH

PRACTICES MAY PRODUCE LOOSE CHIPS OR PARTICLES OF PTFE. THEREFORE, TO AVOID CONTAMINATION, ALL PARTICLES OF PTFE MUST BE REMOVED FROM HANDS AND CLOTHING BEFORE LEAVING THE WORK AREA.

Specification

3 Uniplugsheath cables are manufactured to conform with Specification No. EL1864. Uniplughitemp cables are manufactured to conform with Specification No. EL1692 and are constructed to ECM 35 and ECM 36 and Rolls Royce Specification ESW-05DBA01; they withstand the climatic test called by British Standard BS 3G100.

Identification

4 The correct Uniplugsheath cable used in a HT ignition circuit will be identified by reference to the appropriate equipment Topic 3 and from the following descriptions. Uniplughitemp cables are printed with an alphanumeric code which indicates; the country of origin (GBX for UK), the manufacturer (BB for BICC), the year of manufacture, the conductor size. The cables are supplied on reels labelled with specification or order requirements.

CABLE TYPES

General

5 Two sizes of Uniplugsheath cable (fig 1) are currently in service use; these are No. 3 and No. 7. Two sizes of Uniplughitemp cable (fig 2) are available; these are No. 10 and No. 12.

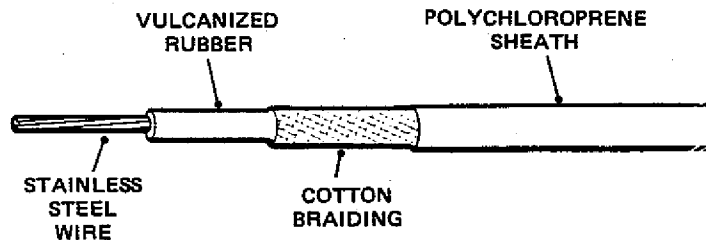


Fig 1 Uniplugsheath high tension ignition cable

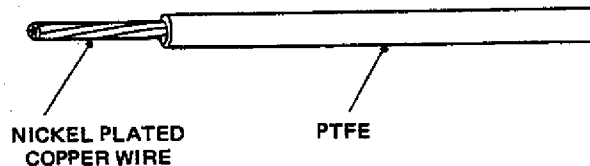


Fig 2 Uniplughitemp tension ignition cable - typical

Wire size and properties

6 Table 1 and Table 2 list the available wire sizes, the Sect/Ref No. and properties of both Uniplugsheath and Uniplughitemp high tension ignition cables. The sizes of Uniplughitemp cables, No. 10 and No. 12 are approximately equivalent to the American Wire Gauge (AWG) sizes 10 and 12.

TABLE 1 UNIPLUGSHEATH HIGH TENSION IGNITION CABLE AND PROPERTIES

Size	Number and nominal dia. of conductor wires/core (in)	Overall cable dia. max. (in)	Nominal mass	Maximum resistance at 20 °C (ohms/1000 yd)	Sect/Ref No.
No. 3	7/0.012	0.215	-	14.40	5E/1056719
No. 5	-	-	-	-	5E/6506940
No. 7	-	-	-	-	5E/6209436

TABLE 2 UNIPLUGHITEMP HIGH TENSION IGNITION CABLE AND PROPERTIES

Size	Number and nominal dia. of conductor wires/core (in)	Overall cable dia. max. (in)	Nominal mass	Maximum resistance at 20 °C (ohms/1000 yd)	Sect/Ref No.
No. 10	37/0.40	4.25/4.50	-	4.01	-
No. 12	37/0.315	4.0/4.25	-	6.55	-



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