

OBSOLESCENT
JULY 1983

Specification for

Lever-operated manual switches for aircraft

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Foreword

This specification has been prepared as part of a programme of work to bring the aircraft series British Standards for hand-operated switches up to date in relation to present day and probable future requirements, and to take account of experience gained in working to earlier issues of the standards. It is intended to replace BS G 129 and, in part, BS G 145. In preparing the standard, account has been taken of the requirements of relevant American specifications, and of the work of Technical Committee 20 — Aircraft, of the International Organization for Standardization, to establish ISO Recommendations on aircraft switches to facilitate their interchangeability internationally.

The revised standard provides for the classification of the switches according to the environmental conditions for which they are suitable.

Preferred dimensions and fixing holes have been defined for the switches, and these are in substantial agreement with ISO Recommendation R.....¹⁾. The other requirements of the standard are applicable to all types of switch.

The tests, which are grouped as type tests, production tests and quality tests, now include a test of the force required to operate the switch, and recommendations as to suitable tests for verifying the serviceability of the switches after storage or use.

The standard requires reference to the following British Standards:

BS 2 G 100, *General requirements for electrical equipment and indicating instruments for aircraft*.

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

BS G 178, *Crimped joints for general purpose electrical cables for aircraft*.

NOTE The figures in British units are to be regarded as the standard: metric conversions are approximate. 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 The standard will be withdrawn in due course.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 10 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⁾ In course of preparation.

1 Scope

This British Standard specifies the requirements for two classes of single-hole fixing, lever-operated manual switches for use in nominal 28 volt d.c. and 115/200 volt three-phase, 400 cycle a.c. systems in aircraft.

Class 1 switches are sealed and are suitable for higher altitude and wider temperature conditions than Class 2, which are sealed only at the lever entry.

Section 1. General requirements

2 General

- a) The switch shall comply with the requirements of this British Standard, those of BS 2 G 100 and of the relevant switch drawings.
- b) The switch shall be suitable for either of the following temperature and altitude classifications:

Class 1. Suitable for use at altitudes up to 70 000 ft (21 000 m) and for temperatures within the range -40°C to $+70^{\circ}\text{C}$; they should not suffer damage or deterioration when subjected to -65°C .

Class 2. Suitable for use at altitudes up to 20 000 ft (6 100 m) and for occasional use at 60 000 ft (18 300 m), and for temperatures within the range -20°C to $+55^{\circ}\text{C}$; they should not suffer damage or deterioration when subjected to -40°C .

- c) The switch shall be suitable for mounting through the panel from the rear and shall operate satisfactorily when mounted in any attitude.
- d) The switch may be the two- or three-position type, with one or more poles: it may be self-retaining and/or spring return. It should preferably be designed to allow the incorporation of integral locking of the lever in any or all positions.
- e) The method of operation of the switch shall be by means of a single lever, moving in a plane at right angles to the mounting panel. The relationship of the lever positions to the keyway shall be as shown in Figure 1, and the relationship of the terminal numbers to the lever positions shall be as stated in the individual specification²⁾.
- f) The switch terminals shall be identified by number in the sequence shown in the individual specification²⁾.

3 Rating

- a) *Voltage.* The switch shall operate in nominal 28 volt d.c. and 115/200 volt three-phase, 400 cycle a.c. systems having the characteristics specified in BS 2 G 100-3. In addition, the switch shall be suitable for use at voltages down to 4 volts d.c. or a.c.
- b) *Current.* The switches shall be suitable for all of the following normal current ratings:
 - 15 amp resistive load
 - 10 amp inductive load
 - 7.5 amp tungsten filament lamp load (28 V. d.c.)
 - 2.5 amp tungsten filament lamp load (200 V. a.c.)

In addition, unless otherwise declared the switch shall be suitable for operation at 100 milliamps resistive load at voltages down to 4 volts.

The inductive loads shall be as follows:

- 28 V. d.c. — 10 amp 40 mH
- 200/115 V. a.c. — 10 amp 0.70 power factor lagging.

4 Declarations

In addition to the declarations required by BS 2 G 100-1: the manufacturer shall declare:

- a) classification;
- b) the limits of the forces necessary to operate the switch to any position;
- c) the system of batching used for quality test sampling;
- d) switch operation relative to lever position and terminal numbering.

5 Marking

In addition to the terminal numbering the following minimum information shall be clearly and indelibly marked on each switch:

- i) BS G 194 and classification;
- ii) manufacturer's name or identification;
- iii) manufacturer's type number;
- iv) "15 amps res" (i.e. res = resistive);
- v) "28 volt d.c./200 volt a.c."

²⁾ Attention is drawn to the fact that it has not been found practicable to standardize these features.