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Specification for  
**Printed board mounted programming  
switches of assessed quality :  
generic data and methods of test**

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Spécification pour les interrupteurs/contacteurs de programmation montés sur  
les cartes imprimées de qualité assurée: données génériques et méthodes d'essai

Spezifikation für auf Leiterplatten montierte Programmschalter bestätigter Güte:  
Fachgrunddaten und Prüfverfahren

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### Foreword

This British Standard which has been prepared under the direction of the Electronic Components Standards Committee is the generic specification for printed board mounted programming switches in the system of standards for electronic components of assessed quality.

This standard calls for the use of substances and/or test procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical

suitability and in no way absolves either the supplier or the user from statutory obligations relating to health and safety at any stage of manufacture or use.

When references are given in parentheses to IEC Publications, the standards are usually identical in technical content, apart from minor deviations, with the British Standard quoted, or with this specification.



**Amendment No. 1**  
**published and effective from 28 April 1989**  
**to BS 9565 : 1981**

**Specification for printed board mounted**  
**programming switches of assessed quality:**  
**generic data and methods of test**

## Revised text

**AMD 4715**  
**April 1989**

### Contents

Against 1.2.4.5 delete 'Noise'.  
 After 1.2.4.9 insert the following.  
 '1.2.4.10 Intermittency of contact resistance'.

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### Clause 1.1.1 Scope

In line 13 delete '(see 1.3(10) of BS 9000 : Part 1)' and substitute '(see 5.12 of BS 9000 : Part 1 : 1981)'.

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### 1.1.2 Related documents

Delete the reference to BS 4000.

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**April 1989**

### Clause 1.1.9 Delayed delivery

In line 1 delete 'Switches' and substitute 'Unless otherwise stated in the detail specification, switches'.

At the end of the clause insert the following.  
 'The maximum allowable period specified in the detail specification shall be 3 years.'

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### Clause 1.1.10 Procedure for qualification approval

In line 2 delete 'in 2.3.2 of BS 9000 : Part 1' and substitute 'in clause 14 of BS 9000 : Part 1 : 1981'.

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### Clause 1.1.14.2 Damp heat tests

In lines 4 and 5 delete 'of 2.6.4.1 of BS 9000 : Part 1' and substitute 'of 20.11 of BS 9000 : Part 1 : 1981'.

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### Clause 1.1.16 Sampling procedures

In lines 2 and 3 delete 'in 2.5.1.2 of BS 9000 : Part 1' and substitute 'in 17.4.3 of BS 9000 : Part 1 : 1981'.



#### Clause 1.2.4.3.1 Requirements

Delete the existing clause and substitute the following.

**1.2.4.3.1 Method of test.** The specimen shall be securely mounted on a rigid metal plate or printed wiring board using its normal fixing device. The dimensions of the metal plate shall be such that the contour of the switch on the mounting plate is exceeded.

The a.c. test voltage, calculated from the working voltage given in the detail specification by formulae 1 and 2 given below shall be applied sequentially for 60 s between:

- (a) the two terminations forming the circuit which has the smallest contact separation on opening; (the switch actuator shall be in a position which causes these contacts to be open at the time of the test.)
- (b) all terminations connected together and any exposed metal part not intended to be electrically connected.

All parts accessible from the front panel and made from an insulating material shall be wrapped with metal foil and included as part of the 'exposed metal part' test point. The proof voltage  $E$  shall be determined in relation to maximum switched voltage  $U$  by one of the two following formulae, unless otherwise stated in the detail specification.

For switches intended to meet the requirements of BS 415 (IEC 65), formula 1 shall be applied; in all other cases formula 2 shall be applied.

- (1)  $E = 2 U + 1500$ : minimum value of  $E = 2000$  V d.c. or a.c. peak.
- (2)  $E = 3 U$ : minimum value of  $E = 500$  V d.c. or a.c. peak.

**1.2.4.3.2 Requirements.** The switch shall withstand the applied voltage.

There shall be no evidence of breakdown or flashover.

**1.2.4.3.3 Details to be specified in the detail specification.** When this test is required by the detail specification the following details shall be specified.

- (a) Preparation of the specimen.
- (b) The basis for determining the proof voltage  $E$ .
- (c) Any deviations from the standard test method.'

#### New clause 1.2.4.10

After clause 1.2.4.9.1 insert the following.

**1.2.4.10 Intermittency of contact resistance.** Appropriate pairs of terminations whose related internal contacts complete a circuit shall be connected to a suitable measuring apparatus capable of measuring contact intermittency. The number of pairs of terminations and their selection shall be those pairs previously selected for test 1.2.4.1.

**1.2.4.10.1 Requirements.** For contacts normally closed, there shall be no intermittency corresponding to a change of contact resistance of more than  $10\text{ k}\Omega$  of duration greater than  $10\text{ }\mu\text{s}$ , unless otherwise stated in the detail specification.

For contacts normally open there shall be no intermittency corresponding to closure of the circuit by an equivalent resistance of less than  $100\text{ k}\Omega$  of duration greater than  $10\text{ }\mu\text{s}$ , unless otherwise stated in the detail specification.



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#### Clause 1.2.6.1 Soldering

Delete clauses 1.2.6.1, 1.2.6.1.1 and 1.2.6.1.2 and renumber the existing 1.2.6.1.3 and subclauses as 1.2.6.1.4, 1.2.6.1.4.1, 1.2.6.1.4.2, etc.

Insert revised clause 1.2.6.1 and its subclauses 1.2.6.1.1, 1.2.6.1.2 and 1.2.6.1.3 as follows.

##### **‘1.2.6.1 Soldering**

**1.2.6.1.1 Method of test for solderability and resistance to soldering heat.** Terminations shall be soldered in accordance with tests Ta and Tb of BS 2011 : Part 2T : 1981 unless otherwise stated in the detail specification.

Two methods are regarded as standard, the solder bath method and the soldering iron method. The relevant detail specification shall specify which of the two methods is to be used and, where applicable, the soldering bit size.

**1.2.6.1.2 Solderability. Test Ta.** The detail specification shall specify whether method A or method B is to be used.

**Requirements.** As in test Ta of BS 2011 : Part 2.1 T : 1981.

**1.2.6.1.3 Resistance to soldering heat. Test Tb.** The detail specification shall specify whether method 1a, 1b or 2 is to be used.

**Requirements.** There shall be no signs of fracture, loosening of parts or other damage such as would impair the operation and performance of the switch.’

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#### Clause 1.2.6.3 Vibration

Delete this clause including 1.2.6.3.1 and substitute the following.

**‘1.2.6.3 Vibration.** Unless otherwise specified in the detail specification the test shall be carried out in accordance with test BS 2011 : Part 2.1Fc : 1983.

The test procedure and the severity of the test shall be given in the detail specification..The switch shall be mounted as specified in **1.2.1.6** and shall be vibrated in each of three mutually perpendicular directions.

The switch shall then be subjected to the tests described in **1.2.2.3, 1.2.4.1, 1.2.4.9** and if applicable, **1.2.6.10** (operational seals only).

When measurement of change in the value of contact resistance during the test is called for in the detail specification, the switch shall be connected in a circuit with suitable monitor.

**1.2.6.3.1 Requirements.** The switch shall meet the requirements of **1.2.2.3, 1.2.4.1.2, 1.2.4.9.1** and if applicable, **1.2.6.10.1** (operational seals only).

If monitored, there shall be no change of contact resistance greater than that stated in the detail specification.’

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#### Clause 1.2.6.4 Acceleration

Delete this clause including 1.2.6.4.1 and substitute the following.

**‘1.2.6.4 Acceleration.** Unless otherwise specified in the detail specification, the test shall be carried out in accordance with BS 2011 : Part 2.1Ga : 1984.

The switch shall be mounted as specified in **1.2.1.6** and shall be subjected to acceleration for the duration and at the severity given in the detail specification in each of three mutually perpendicular directions.

