

Chapter 2

WEATHERPROOFING OF ELECTRICAL EQUIPMENT
ON AIRCRAFT

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Introduction

1. In electrical components where a high insulation resistance is essential, as for example those incorporating relay windings, it is important that adequate protection should be afforded against the ingress of moisture. Without such protection equipment on aircraft is particularly susceptible to penetration of moisture, which reduces insulation resistance and may cause mechanical failure due to corrosion of metal parts.

Shrouds and sealing compounds

2. Considerable use was made in the past of rubber shrouds and of sealing compounds, such as P.I.C. No. 1 and 2, in an attempt to exclude moisture. Experience has shown, however, that such treatment provides an incomplete seal, which tends to aggravate conditions inside the equipment over a period of time, since moisture which enters as a result of the "breathing" of the equipment, under varying atmospheric pressures, is not able to escape as it could in a freely ventilated unit.

Note . . .

The use of Compound Grease type (33H/9109217 and 33H/9109218) also known as P.I.C. No. 1, is no longer permissible on electrical equipment, since it has a deleterious effect on rubber insulation.

3. Compound insulating and filling B.I.C.C. No. 391 (33H/9109209) also known as P.I.C. No. 2, is only used to seal the cable entries of certain undercarriage components, such as micro switches, which are particularly exposed to water.

Hermetical sealing

4. Equipment on which it is essential to maintain a high degree of insulation resistance is hermetically sealed on manufacture, thus precluding the necessity for any further treatment in service. Components not hermetically sealed may be provided with free ventilation and drainage.

Approved methods of waterproofing

5. The approved methods of waterproofing items of equipment, such as micro switches, which are vulnerable to ingress of moisture may be found in A.P.4343C, Vol. 1, Bk. 1. On actuators, circuit breakers, relays and the like, subject to bay servicing, various air drying varnishes and sealing compounds such as Well Seal (34B/9429676) and Chromated sealing (33H/113) are used when refitting covers. The type used, will depend upon the component design and will be specified in the relevant chapter.

6. Corrosion problems due to ingress of moisture or corrosive fluids into electrical plugs and sockets can be obviated by the use of "Potting Techniques" (Chap. 7. App. 1, 2, 3) or on certain types by the use of sealing glands and grommets which are described in A.P.4343P, Vol. 1, Bk. 1, Sect. 3.

Compound silicone M.S. No. 4.

7. Compound silicone M.S. No. 4(33H/9424829) is the only lubricant to be used on the threads of plugs and sockets.

Note . . .

No lubricant is to be applied to the pins or inserts of plugs and sockets.

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