

Chapter 31

EMERGENCY LAMP UNITS, PHOENIX, TYPES 80024 MK. 2 AND 80090

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LEADING PARTICULARS

Emergency lamp unit, Phoenix, Type 80024 Mk. 2 ..	Ref. No. 5CX/5437
Emergency lamp unit, Phoenix, Type 80090	Ref. No. 5CX/5843
<i>Cover, filament lamp</i>	Ref. No. 5CX/5881
<i>Filament lamp</i>	Ref. No. 5L/9951172
<i>Batteries, Type 1</i>	Ref. No. 5J/9101101
<i>Weight</i>	8 oz.

Introduction

1. The emergency lamps, Phoenix Type 80024 Mk. 2 and Type 80090, are lighting units designed to provide automatic illumination of the aircraft cabin in the event of a crash or abnormally heavy landing. The units incorporate their own power supply in the form of dry batteries, and have an integral inertia switch with a reset mechanism which also provides for manual operation and testing of the lamp. The lamps are thus entirely self-contained and can be removed from their mounting and used as a hand torch if necessary.

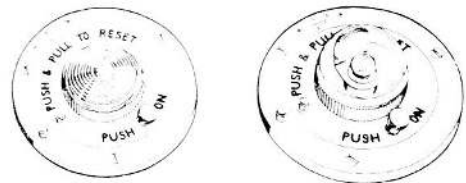


Fig. 1. Front view of Type 80024 Mk. 2 and Type 80090 emergency lamps

2. The lamps are identical in construction and operation but differ in external finish and light distribution. The Type 80024 lamps have

a black moulded body with an even light distribution through 360 deg. on the horizontal plane of the lamp housing. The Type 80090 lamps have an ivory or white moulded body, and a side reflector integral with the lamp holder provides an additional side-spill of light for the illumination of exit notices, steps, etc. The front of the two lamps are shown in fig. 1, the Type 80024 Mk. 2 lamp on the left hand, and the Type 80090 lamp on the right hand.

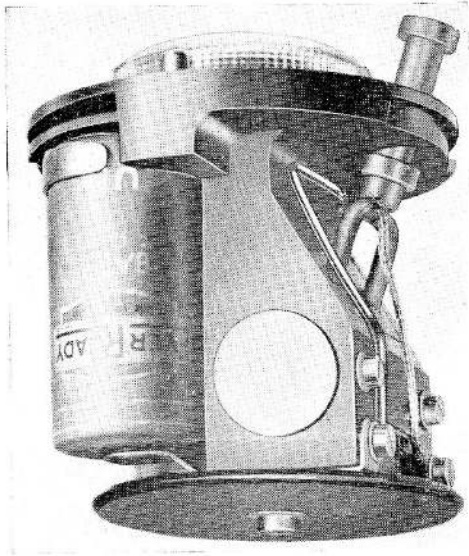


Fig. 2. Side view of typical unit

DESCRIPTION

General

3. The lamp unit, which consists essentially of a moulded body in which are accommodated an inertia switch with reset-manual facility, and a lamp holder and reflector assembly, is fitted in position by a mounting ring. A side view of the lamp, in fig. 2, shows the body, the reset-manual fork assembly of the inertia switch, one end-cap of the inertia switch tube, the base plate and one of the batteries. The filament lamp holder is positioned in the centre of a concave aluminium reflector fitted into a lamp holder housing, and is enclosed by a clear plastic cover which screws on to the flange of the housing. The two Type 1 dry batteries are held in position by a retaining clip and are connected to the filament lamp side contact and the adjuster assembly by copper strip contacts; a flexible lead connects them to the

reset-manual fork. The lamp unit has no outer cover and is fitted into a suitable aperture in the air frame by the mounting ring. Two drilled bosses, one on the lamp unit, and one on the mounting ring, ensure that the lamp is correctly fitted and provide for the locking of the unit by copper locking wire.

Inertia switch

4. Moulded in the body of the lamp is a longitudinal hole, or switch tube, in which is housed a plated steel ball, fitted to each end of the tube is a sealing cap to prevent the ingress of moisture, dust or dirt. Protruding through the walls of the switch tube are the prongs of the reset-manual fork which is held in position by a plunger screwed into the bridge of the fork. The plated steel ball is normally held in a central position in the tube, clear of the prongs of the fork, by a spring-loaded plunger which is part of the adjuster assembly. The adjuster assembly consists of a sleeve, which screws into the body between the batteries, in which is fitted the plunger, the loading spring and the adjuster screw. The plunger, which has a cup shaped face into which the steel ball seats, is held against the ball by the spring, and the tension of the spring determines the force required to operate the switch.

INSTALLATION

5. The lamp is fitted in a $2\frac{3}{4}$ in. diameter hole (beneath which there must be a minimum clearance of $2\frac{3}{8}$ in.) by the mounting ring, and is positioned with the inertia switch horizontal and parallel to the fore and aft plane of the aircraft. The lamp is retained in the mounting ring by a bayonet adapter and ballerick mechanism on the rim of the lamp face and the inside rim of the mounting ring. To ensure that the legend on the face of the lamp is in the correct position the locking bosses should be towards the nose of the aircraft when the unit is mounted in the roof or on the starboard side, and towards the tail when the unit is mounted on the port side. Only tinned copper locking wire (fuse wire) should be used for locking the unit in position so that it can easily be broken and will not interfere with the removal of the unit for use as a hand torch.

OPERATION

6. A schematic diagram of the lamp, given in fig. 3, shows the electrical connections to the principal parts of the inertia switch in the

RESTRICTED

normal position. In this position only the tips of the fork prongs protrude into the switch tube and the ball is retained in the centre of the tube by the plunger of the adjuster assembly. Should the lamp be acted upon by a force in excess of 3g, the ball will be displaced against one of the fork prongs and will be held there by the plunger. The circuit to the filament lamp will now be complete via the adjuster assembly, the steel ball, and the fork assembly; and the lamp will remain operated and the filament lamp illuminated until reset by hand.

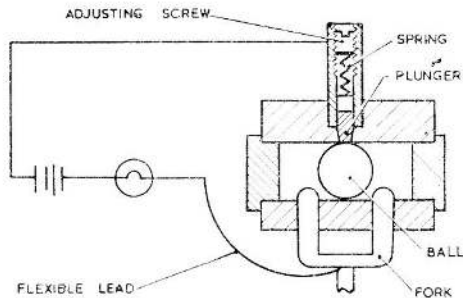


Fig. 3. Schematic diagram

7. The inside of the prongs of the reset-manual fork assembly are a tight fit around the steel ball and when the fork is pushed fully down it rolls the ball back to the centre of the switch tube and re-seats it beneath the adjuster plunger. As the ball is a tight fit into the prongs of the fork it is always in contact with the fork and maintains the circuit to the lamp, and the fork can thus be used as a manual switch as required independent of the operation of the inertia switch. When the fork assembly is withdrawn the steel ball is once more retained in the central position in the switch tube by the adjuster plunger, and the filament will be switched off.

SERVICING

8. The lamp should be removed from the mounting ring and inspected for freedom from damage, and the strip contact, the battery contacts and the fork assembly checked for corrosion. The lamp should then be functionally checked by pushing the reset-manual plunger home, the filament should illuminate and show no signs of flickering or dimming when the lamp is shaken. The batteries should be renewed at three-monthly intervals or more frequently if they show signs of deterioration or corrosion; when tested with a voltmeter, the terminal voltage of the batteries at the instant of switching on the lamp should be not less than 2.6 volt. When renewing the batteries ensure that the centre connections are properly located in the hole at the top of the contact springs.

9. The filament lamp may be renewed, and the reflector cleaned, by removing the moulded plastic cover. Further servicing or dismantling of the unit should not be attempted as it will necessitate the re-calibration of the inertia switch on an acceleration table. The operation of the inertia switch may be functionally checked by dropping the unit, with the inertia switch tube vertical, from approximately 1 in. on to a soft pad and ensuring that the lamp is illuminated. This should be checked with the switch tube in both directions, up and down, and the reset of the mechanism assured. The unit should not operate when shaken or dropped with the switch tube horizontal.

WARNING . . .

Do not attempt to lubricate the unit.

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