

Chapter 57

LANDING LAMP, TYPE K, Mk. 2

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LEADING PARTICULARS

Landing lamp, Type K, Mk. 2	Ref. No. 5CX/5010
Lamp, filament, 350 watts (medium prefocus cap)	Ref. No. 5L/9956705
Operating unit	Ref. No. 5UD/6230
Mounting rig	Ref. No. 5CX/5121
Front glass	Ref. No. 5CX/2058
Weight	6.8 lb
Overall depth, outer housing	6.25 in

Introduction

1. The type K, Mk. 2, landing lamp is in general use in military aircraft and is virtually a larger version of the Type J, Mk. 2. It is electrically operated and beam selection of landing or taxiing is by the use of alternative "out" limit switches. The lamp consists of three main assemblies, namely, the outer housing, the operating mechanism and the retractable filament housing.

DESCRIPTION

Outer housing

2. This is a fabricated coned unit having a flanged rim which, when held between the

plates of the mounting rig, carries the weight of the lamp in the aircraft. The base casting of the operating mechanism is secured to the side of the outer housing by eight screws.

Mounting rig

3. This consists of two metal plates, secured together by screws, between which is clamped the flanged rim of the outer housing. The larger plate fits behind the rim and is fixed to the airframe structure. The smaller, front plate has a circular hole through which the retractable filament housing operates. A scale is engraved round a short length of the periphery of this hole. The mounting rig is a separate assembly and is not normally supplied with the landing lamp.

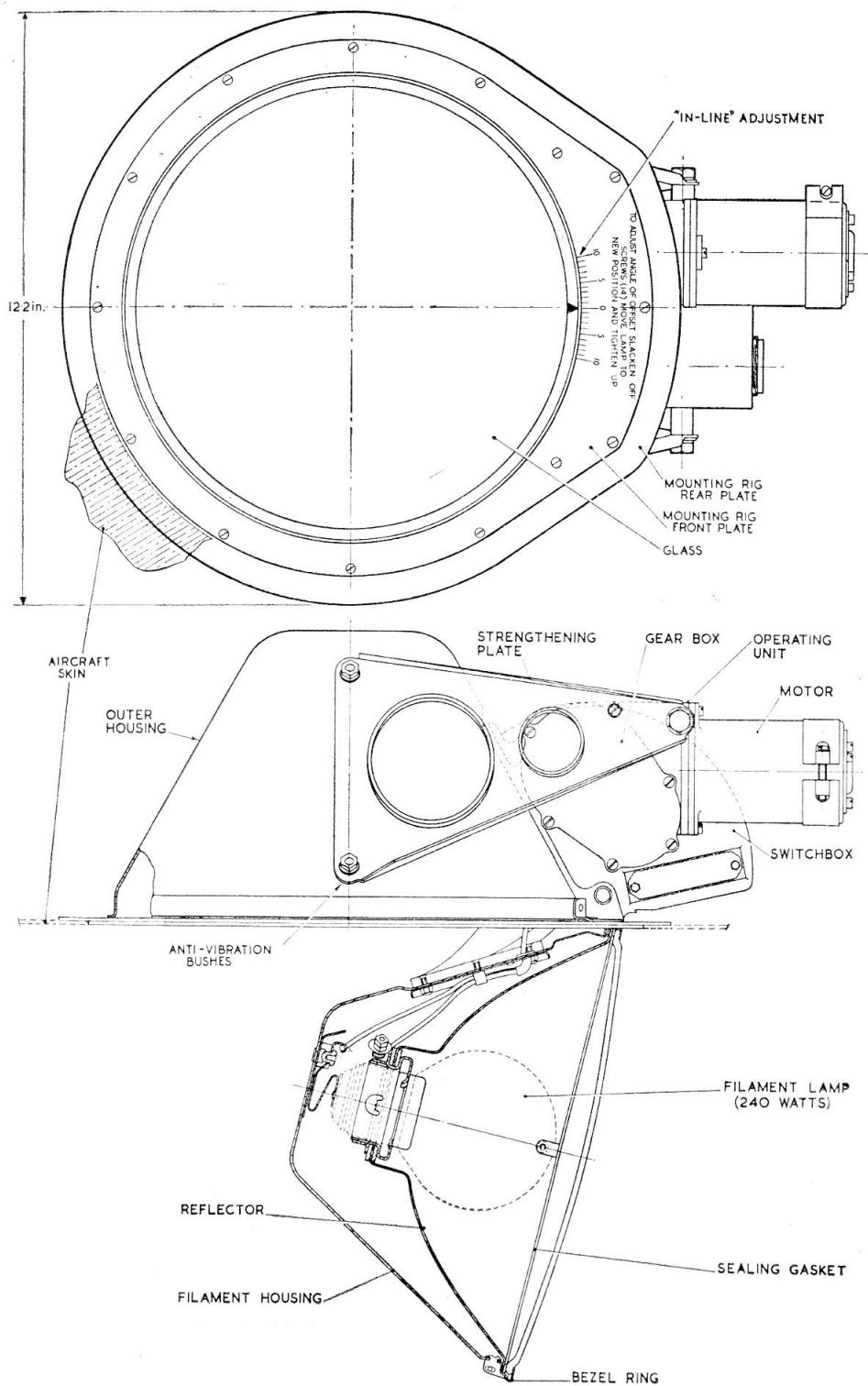


Fig. 1. Type K, Mk. 2 landing lamp

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Beam "in-line" adjustment

4. An index mark, on the bezel ring of the front glass, registers against the scale on the mounting rig front plate. The lamp may be rotated in the mounting rig when the fourteen clamping screws are slackened. This permits adjustment of the beam 10 deg. either side of the fore-and-aft line of the aircraft.

Operating mechanism

5. The operating unit or the Type K, Mk. 2, landing lamp is fully described in A.P.4343D, Vol. 1 Book 3, Sect. 16. The motor is an alternative field reversible series type. It has a spring-loaded clutch which is set to slip when the pressure at the centre of the glass is between 30-55 lb. Deadbeat action of the motor is obtained by the incorporation of an electromagnetic brake.

6. The motor, driving through reduction gearing, operates a rack and pinion quadrant to which is secured the actuating arm carrying the filament housing. The quadrant spindle extends into the switchbox where it carries a switch arm. This switch arm carries a spigot which trips a switch lever carrying a contact. This contact makes with a fixed contact thereby completing the filament lamp circuit. These contacts are not operated until the filament housing is approximately half extended. The actuating arm has a channel through which flexible leads pass from the switchbox to the bulb holder.

Switchbox (fig. 2)

7. This arm also operates three limit switches, one at the fully retracted position and two for the "high" and "low" extended positions. These limit switches are set by the manufacturers and under normal operating conditions should not need adjustment.

Filament housing

8. The filament housing is a fabricated cone having a flanged rim into which are fitted the front glass and the rim of the reflector. At the apex of the cone is fitted a spring contact which bears on the centre contact of the filament lamp cap. The front glass, with its sealing ring, is secured by a bezel ring which locates on a small bracket. The complete housing is held by six screws and nuts to the casting of the actuating arm.

Reflector and bulb holder

9. The reflector is located in the rim of the filament housing and is secured by two screws and nuts. At its centre the bulb holder is fitted. A clamp fitting round the bulb holder forms the electrical connection to the body of the lamp cap. The front of the bulb holder is slotted to correspond with the flange of the bulb cap and so assures correct positioning of replacement bulbs.

Filament lamp

10. The light source for this lamp is a single, coiled coil, gas filled 350-watts filament bulb.

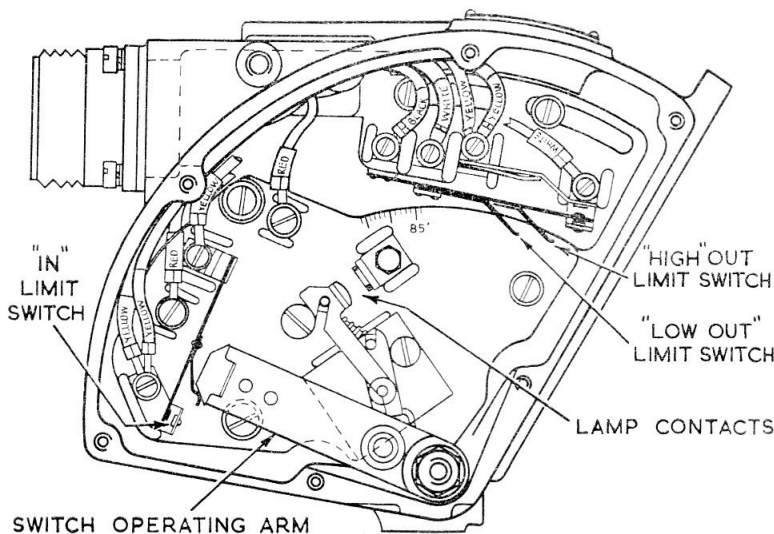


Fig. 2. Operating unit with cover removed

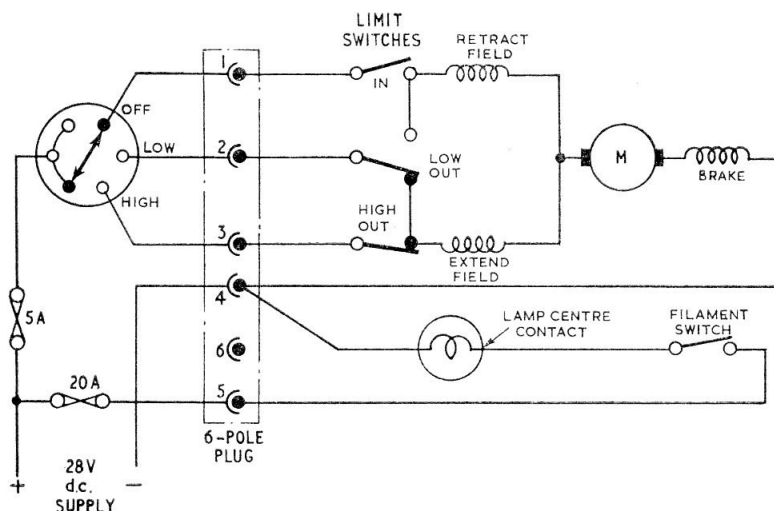


Fig. 3. Circuit diagrams

The location of the filament relative to the bulb cap is made within fine limits to ensure correct focusing when bulbs are renewed. The bulb has a large prefocus cap, the flange of which ensures that it can be inserted in the holder in the correct position only.

Electrical connections (fig. 3)

11. The control and filament circuits of the lamp are fed from the 28V source and connected through a Type M, six-pole, 7 amp socket (Ref. No. 5X/766) at the lamp switchbox. The control circuit, fed from a 5 amp. fuse, is taken through a three-position switch. These positions are OFF, for housing the lamp, LOW and HIGH for extending the lamp and permitting selection of "landing" or "taxying" beam. The filament circuit has a separate 20 amp. fused supply and is not completed until the switch arm has moved to approximately the half extended position.

Operation

12. Selection of LOW at the control switch completes a circuit through the "low" limit switch, the "extend" field of the motor and the brake. The lamp housing will move until the switch-arm causes the "low" limit switch to open and at the same time close a contact in the "retract" field circuit. If further out movement of the lamp is required, i.e., HIGH is selected, the "extend" field circuit is completed through the "high" limit switch.

13. Should the LOW position be again selected the "retract" field circuit is completed through

the "retract" contact of the "low" limit switch. The motor now reverses direction of drive and the lamp housing retracts until the low limit switch "retract" contacts open. If full retraction is required, i.e., OFF is selected, the motor "retract" field is energized through the "in" limit switch which is mechanically operated by the switch arm, to break this circuit when the lamp housing is fully retracted.

SERVICING

Renewing the filament bulb

14. Examine the bulb for signs of blackening or white streaks on the glass. If a new bulb is required, actuate the lamp to the fully extended position. Unclamp the front glass bezel by removing the clamping screw which locates through a bracket on the lamp housing. Lift out the front glass and its sealing gasket. Remove the old and fit the new bulb (Ref. No. 5L/9954717).

15. Clean the reflector and front glass using a soft, clean cloth. If necessary use soapy water to remove dirt. Avoid finger printing the bulb, reflector and front glass and do not use any polish for cleaning.

Renewing a front glass

16. Proceed as for renewing a bulb. Remove all broken glass and fit the new front glass (Ref. No. 5CX/2058) with its sealing gasket (Ref. No. 5CX/5131), renewing this gasket if necessary. Replace the bezel ring and secure it to the bracket provided.

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General

17. Check the lamp for security in the mounting. Check the operation of the lamp for a full functional check. Do not leave the filament burning for long periods in still air as the heat generated will adversely affect the length of life

of the bulb. The general chapter on landing lamps is in A.P.4343, Vol. 1, Sect. 21. For servicing of the operating unit reference should be made to A.P.4343D, Vol. 1, Sect. 16.