Chapter 28

LANDING LAMP, HARLEY, TYPE 9, Mk. 12

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Landing lamp, Harley, Type 9, Mk. 12	*Stores Ref. 5CX/5094*
Filament lamp (special cap) double filament, 500/240 watts	*Stores Ref. 5L/X959802*
Front glass	*Stores Ref. 5CX/5099*
Lens	*Stores Ref. 5CX/5104*
Actuator assembly	*Stores Ref. 5CX/5112*
Extended angle	*90 deg.*
Weight	*10 lb.*

Introduction

1. The Harley, Type 9, Mk. 12 landing lamp fits into a 10¾ in. dia. aperture in the aircraft wing or fuselage. It is operated by an electrical power unit or actuator.

DESCRIPTION

Outer housing

2. The outer housing is a machined casting which incorporates the mounting flange and a bracket to support the actuator trunnion attachment. Attached to the casting are two separate terminal blocks, one for the actuator control cables and one for the filament cables. The mounting flange has a number of lightening holes and carries the pivot bearings which support the retractable filament housing. A rear cover is attached by screws to the outer housing.

Operating mechanism

3. Viewed from the front, the right-hand journal of the filament housing carries the actuating lever to which the forked eye, ram or plunger end of the actuator is connected. The trunnion end of the actuator is

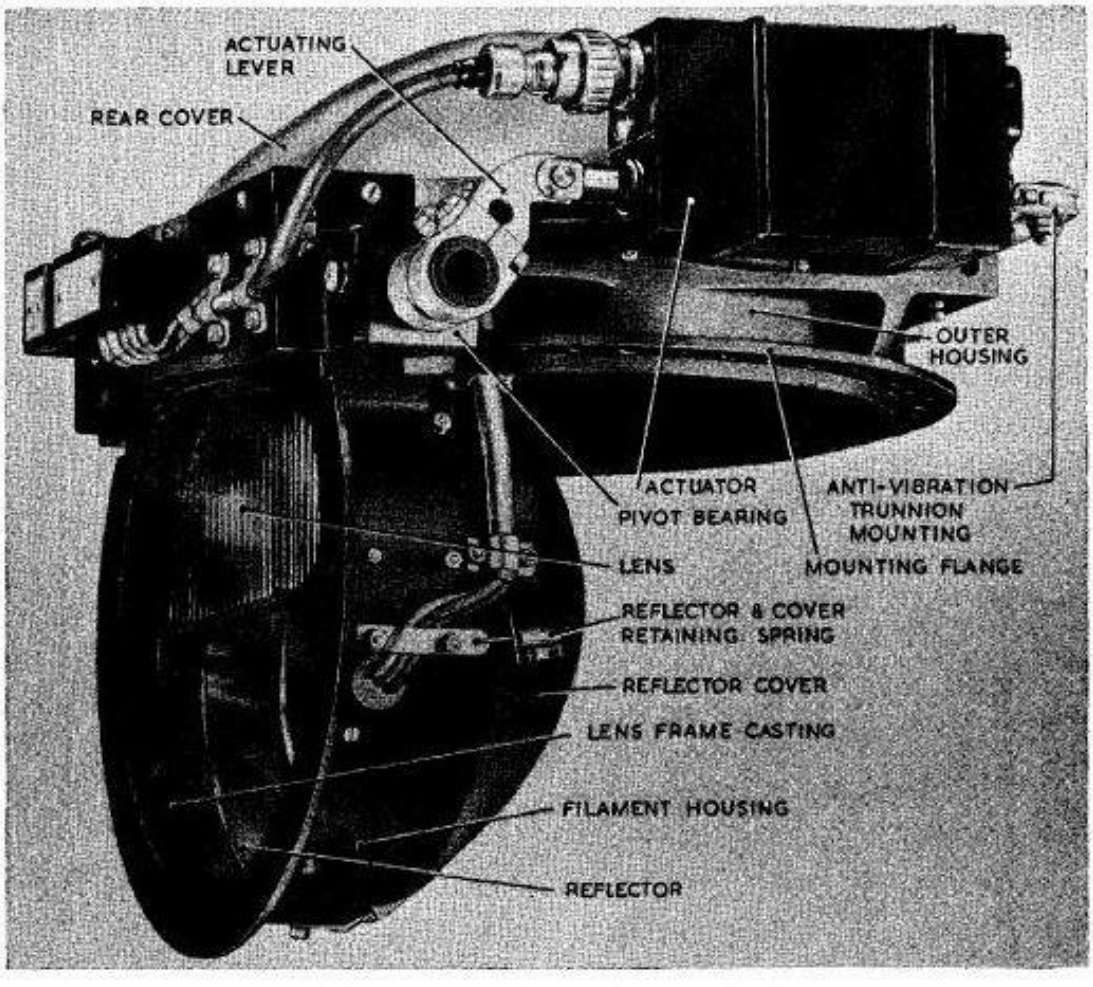

Fig. 1. Harley landing lamp, Type 9, Mk. 12

pivoted to a lever which in turn pivots on a bracket on the outer housing casting. This arrangement permits the actuator to move as a solid link for the final $\frac{1}{16}$ in. of retracting motion, and any slackness in the operating linkage is absorbed by the compression of a spring attached to the trunnion pivot lever. The small movement of this lever also operates a snap switch connected in series with the filament relays (*fig.* 2).

4. The actuator limit switches and brake adjustments are set up by the manufacturers and should not normally require alteration in service. Details of the actuator will be found in the relevant chapter of A.P.4343D, Vol. 1, Sect. 14.

Filament housing

5. This is the moving part of the lamp and consists of the outer frame casting into which the front glass and lens frame casting are fitted. The lens frame casting incorporates the fixed half clamp support for the filament lamp on a horizontal cross member which also supports the lens. The lens is secured by rubber padded clips at the top and by two spring loaded clips at the frame cross member. This arrangement allows for expansion of the lens in the frame.

6. The lamp cap is held in the lens frame by a clamp having a locating hole for the cap locating pin and secured by two screws. The reflector rim bears against the lens frame casting, and is held in place by four coiled springs which clip into holes in the outer frame casting.

Filament lamp

7. The light source of this lamp has two filaments, the main filament rated at 500 watts and the auxiliary (or taxying) filament at 240 watts. It has three colour coded 2 B.A. terminals. The main filament is accurately positioned by the lamp cap to be at the focal point of the reflector while the secondary filament is slightly above and behind it and produces a more diffused beam. The lamp cap has a locating pin on the side which ensures correct positioning of the bulb in its supporting clamp. The flexible cable assembly to the bulb and the bulb terminals are colour coded :—

Red	.. ..	Main filament
Yellow	..	Auxiliary filament
Black ..	..	Negative

Electrical connections (*fig. 2*)

8. The filaments and actuator are supplied from the 28-volt d.c. source. The filaments are controlled by Type S relays fitted remotely from the lamp and these in turn are controlled by a three-way, centre off position, switch in the aircraft cockpit. The relay circuit supply is taken through a snap action switch which opens the circuit during the final retracting motion of the actuator and ensures that the filaments cannot be switched on when the lamp is fully retracted.

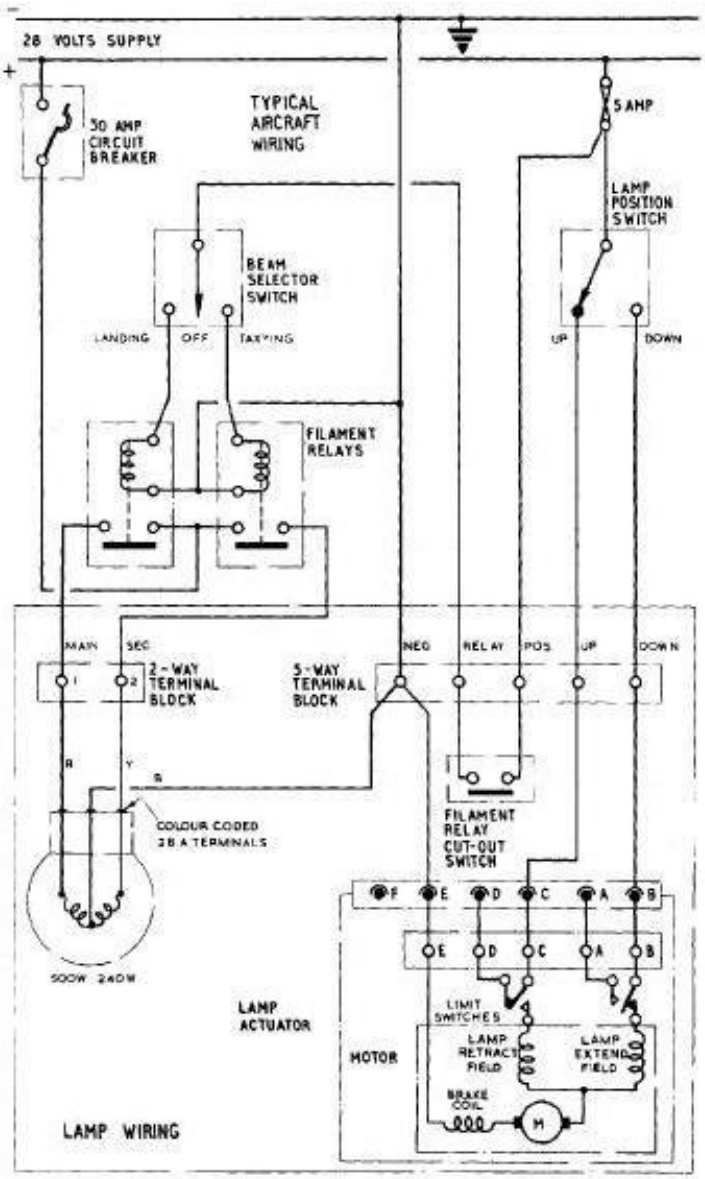

Fig. 2. Circuit diagram

9. The actuator is controlled by a two-way switch in the cockpit. From the lamp terminals a short flexible cable having a standard Breeze type plug connects to the actuator.

SERVICING

Renewing a bulb

10. Examine the bulb for signs of general blackening or white streaks on the glass. The bulb should be renewed if these are evident. If a new bulb is to be fitted, operate the control to the fully extended position of the filament housing. Unhook the four coiled springs which secured the reflector, withdraw the reflector and place it face downward on a flat surface. Disconnect the bulb terminals and lift the cable assembly clear. Remove the bulb by first removing the screws and half clamp which hold it.

11. Clean the inside of the lamp housing with a clean soft cloth. Do not use polish on the reflector. If the front glass, lens and reflector require it they may be cleaned using soapy water and dried with a clean cloth.

12. When renewing the bulb ensure that it locates correctly, by the locating pin, into the clamp. Reconnect the cable assembly to the correct colour coding and do not over-tighten the terminal nuts. Replace the reflector and secure it by the hooked retaining springs.

Renewing a lens

13. Proceed as for renewing a bulb and then remove the two spring loaded clips which hold the lens at the lens frame casting cross member. Fit the new lens with its flat side toward the front glass. Replace the rubber pads and lens clips. Re-assemble the filament lamp, lamp cables and reflector.

Renewing a front glass

14. Remove the lamp from the aircraft to a workshop bench. Remove the reflector and bulb and the back cover of the outer casting. Remove the clips securing the cable assembly and withdraw the cable clear of the outer frame of the lamp housing. Remove the screws securing the lens frame to the outer frame and lift out the lens frame complete with the lens. Remove six countersunk screws holding the front glass retaining ring and withdraw this ring. Remove the front glass and sealing ring.

15. Clean away all surplus sealing compound and fit the new glass packing the space between the edge of the glass and the outer casting with sealing strips (Stores Ref. 5CX/5085). Replace or renew the sealing ring (Stores Ref. 5CX/5100) and secure in position by replacing the glass retaining ring and the lens frame assembly. Replace the cable through the outer frame and clip in place. Replace the bulb (correctly positioned) and terminal connections (checked for colour coding) and then replace the reflector and back cover of the outer casting.

Operation checks

16. If the lamp can be operated on the bench, see that the spring-loaded damper is functioning. After renewing components of the lamp on the aircraft operate a few times and check that no fouling occurs, paying particular attention to the exposed cable assembly on the filament housing frame. The filaments should be switched on for short periods and the lamp retracted to check that the final retracting motion breaks the lamp relay circuit. The general chapter on landing lamps is in A.P.4343, Vol. 1, Sect. 21.

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