Chapter 5

WING FLAP TEST UNIT

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Leading Particulars

Wing Flap Test Unit ... ... Ref. No. 26DM/95118

Motor Data:-

Min commutator dimension	5/16 in.
Max commutator dimension	1 in.
Eccentricity	0·0005 in.

INTRODUCTION

1. The equipment is used for the functional testing and calibration of the two flap position indicator gearboxes. It is composed of a test box and a gearbox assembly.

DESCRIPTION

GEARBOX ASSEMBLY

2. The gearbox is driven by a variable speed a.c. series motor, and the port and starboard indicator gearboxes under test, are attached to the output shaft via a splined coupling, (fig.2).

3. The speed of the motor can be varied between 20 and 65 rev/min. by adjustment of the speed control knob, which is mounted on the commutator end of the machine. (fig.2).

4. Two control switches located on the right hand side of the assembly allow the motor to be inched or

continuously run in either direction. Next to these are the main isolating switch and the fuse box.

5. Mounted on the left hand side of the assembly is the indicating lamp and isolating switch for the 28V d.c. supply to the Test Box. Above this is the rev. counter, which is driven through the gearbox.

TEST BOX

6. This contains the calibration lamps and the flap position indicator meter. The electrical connections are made via the terminal block, on the front, to the leads from the flap position gearbox under test. The Test Box is illustrated in fig.3 and the circuit diagram in fig.5.

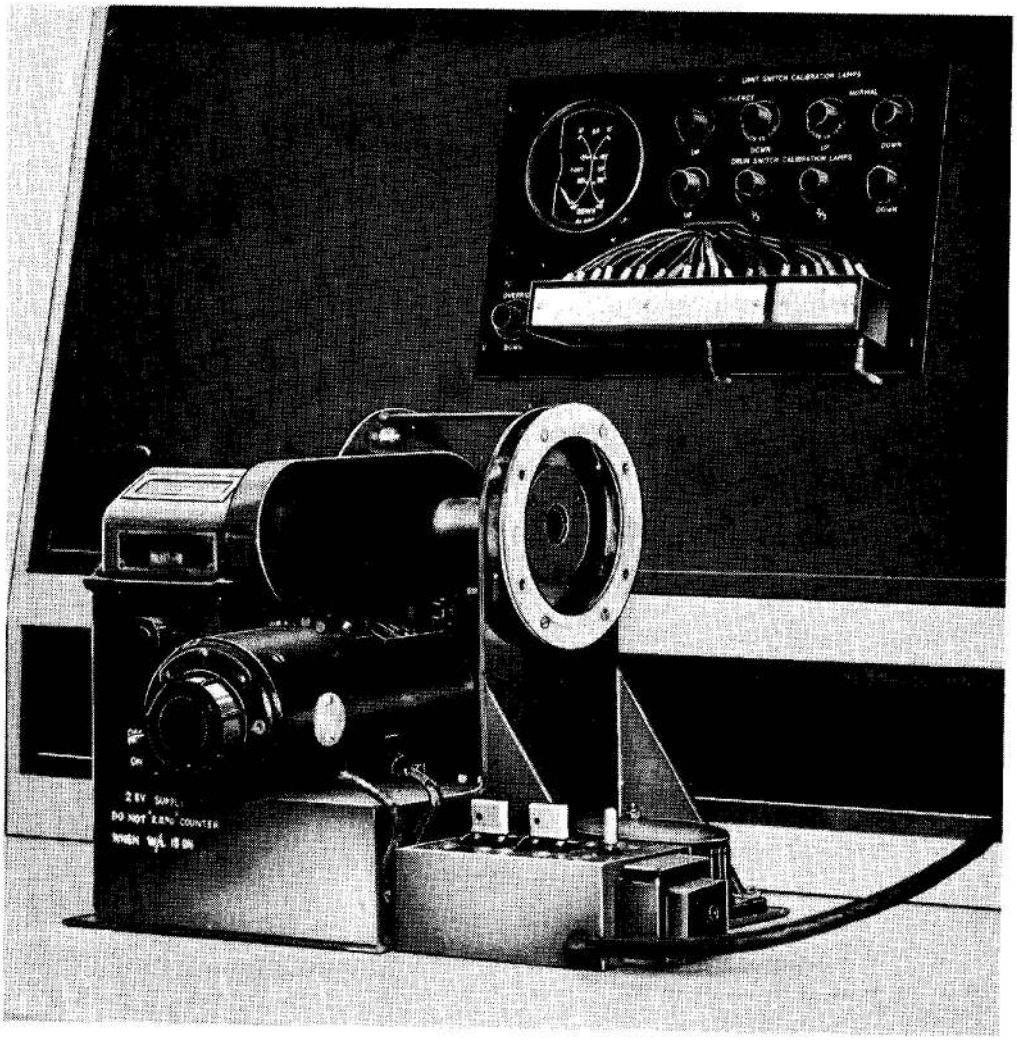

Fig.1. Wing flap test unit

OPERATION

7. The flap position gearboxes under test are attached to the test set as shown in fig.2, the starboard gearbox on the right and the port gearbox on the left. All the connecting leads from the gearboxes are connected to the Snap Blocks of appropriate identification.

8. It is required that the flap position gearbox, the transmitter, the drum switch and limit switches should be synchronised to ensure that the correct indications are shown on the calibration lamps and the flap position indicating instrument.

9. This is achieved by establishing a zero 'UP' point and using this as a datum to obtain the other positions. The transmitter, drum switch and limit switches are tested over the complete range and adjustments made as required.

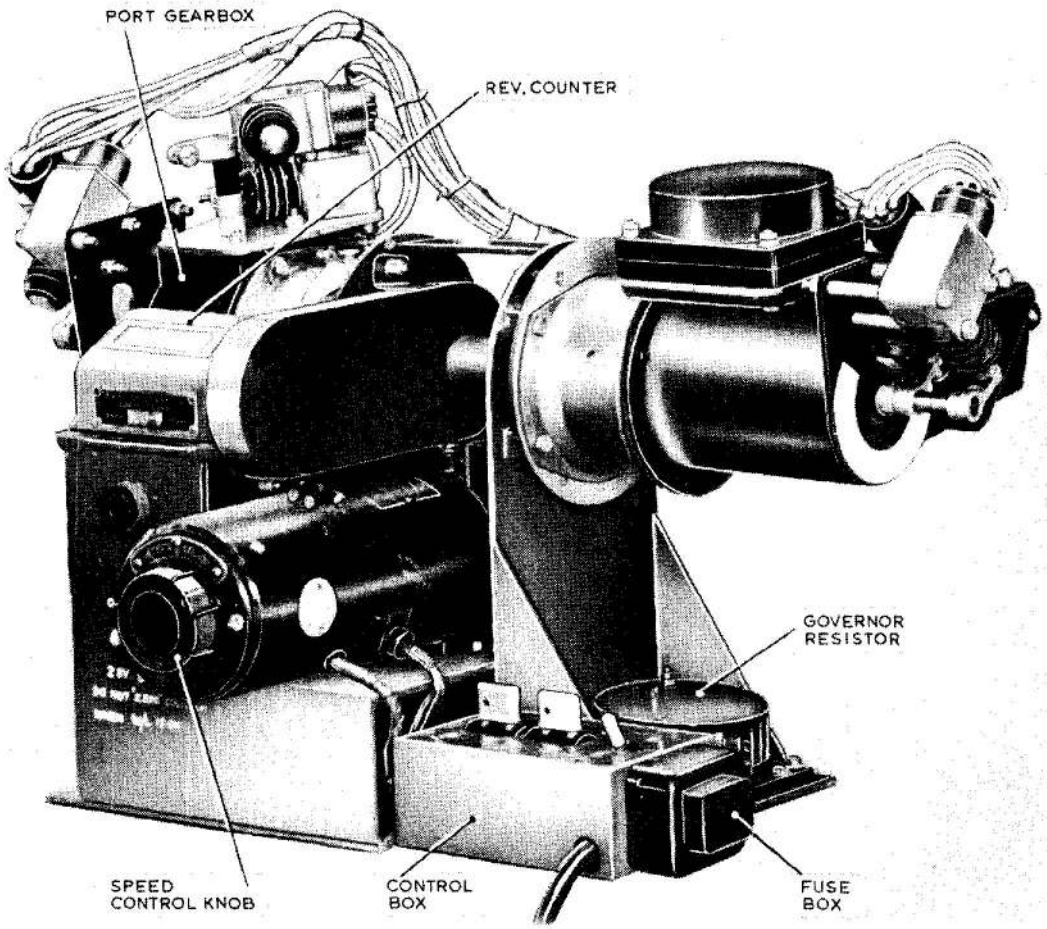

Fig.2. Gearbox assembly with flap position gearbox attached

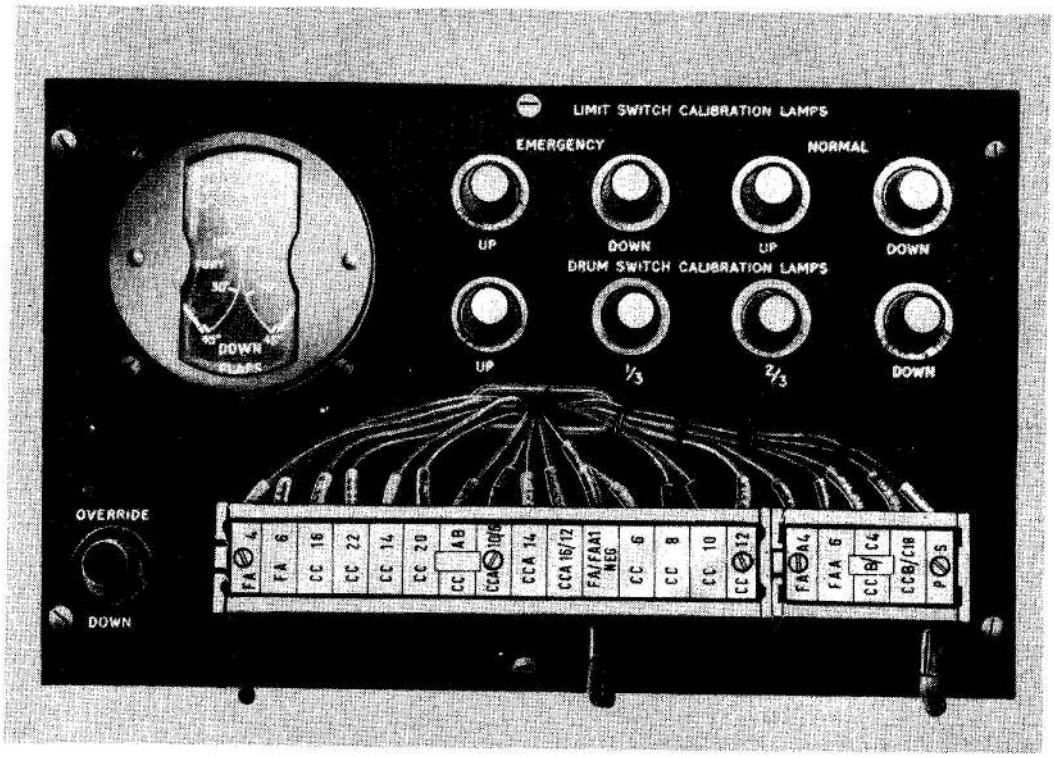

Fig.3. Test box

10. A full description of the operation of the gearbox and the associated equipment is given in the Aircraft Handbook, A.P.4682A and B, Vol.1, Book 3, Sect.5, Group C.

SERVICING

GEARBOX

11. The lubricating grease should be examined at periods stated in the relevant servicing schedule or every 12 months. If the grease in the gearbox appears lumpy, wash out using lead free gasoline, and renew with grease XG.271.

MOTOR

12. The brushes should be renewed when they have worn to the minimum length, 3/16 in. with brushes grade EG.8565 (Morganite).

13. To dismantle the motor for the removal of the armature proceed as follows:- (fig.6)

Governor end of unit

(1) Remove two screws (1) and extract control plate assembly (2) Unsolder leads connected to governor contact on control plate.

(2) Remove four screws (3) and take off inspection cover (4).

(3) Remove grub screw (5) from carrier plate assembly (6) and then withdraw carrier plate assembly (6).

(4) Remove screw (7) from shackle of enclosing cover (8) and slip cover (8) from motor body (9).

(5) Lift both brush springs (10) clear of brushes and withdraw brushes (11) from holders.

(6) Remove two screws (12) and pull governor frame (13) clear of motor body (9). Care must be taken not to damage governor leads as they are pulled through cable entry.

Gearbox end of unit

(7) Remove four screws (14) and take off inspection cover (15) and gasket (16) from end bracket (17).

(8) Remove plug (18) from end bracket/gearbox (17).

(9) Remove grub screw (19) from worm (20) and withdraw worm from armature shaft.

(10) Remove two nuts (21) and spring washers (22) from studs (23) and pull end bracket (17) from motor body (9).

(11) Using a soft faced hammer lightly tap governor end of shaft of armature (24) to extract it from bearing (25).

MOTOR BEARINGS

14. A roller bearing is located at the commutator end, and a sintered bronze bearing at the drive end. The bronze bearing is lubricated from the gearbox through a felt wick, which to maintain satisfactory running, should be kept wet with grease. The wick should be examined every 6 month, or at periods specified on the relevant servicing schedule.

15. The roller bearing should be examined periodically by removing the End Bearing Cap. This should be done at the periods specified or every 12 months. To do this it will be necessary to dismantle the commutator end of the motor as explained in para.13.

16. At the periods specified or every 2 years, whichever is the least, the roller bearing should be removed, and cleaned using lead free gasoline, and the grease XG.271, renewed.

GOVERNOR

17. The governor contacts should be periodically examined. If the governor performs erratically the capacitor or resistor, may need renewal.

TABLE 1

LIST OF COMPONENTS

Gear Box Assembly:-

SW1	Changeover	CWC x D 787
SW2	"	CWC x D 748
SW3	ON/OFF	CWC x D 779

TABLE 1 (Cont'd)

Gear Box Assembly:-		
SW4	ON/OFF	CWC x D 779
FS2	5.A	M.K. Type
FS2	5.A	" "
LP1		24V, 2·8W,
MOTOR		KLAXON Type ED5GB1
Test Box Assembly:-		
LP1-LP9		SMITHS V531
METER		SANGAMO WESTON S127/5/90
TAGBOARD		BULGIN. T.24
TERMINAL BOARD 1	15 way	Ref. No. 5H/4
" " 2	5 way	Ref. No. 5H/3

KEY TO FIG.6

1.	Countersunk screws.	15.	Inspection cover.
2.	Control plate assembly.	16.	Gasket.
3.	Inspection cover screws.	17.	End bracket.
4.	Inspection cover.	18.	Plug.
5.	Grub screws.	19.	Grub screw.
6.	Carrier plate assembly.	20.	Worm.
7.	Cover screws.	21.	Hexagonal nuts.
8.	Enclosing cover.	22.	Spring washers.
9.	Motor body.	23.	Stud.
10.	Brush springs.	24.	Armature.
11.	Commutator brushes.	25.	Bearing.
12.	Cheese-head screws.	26.	Cooling fan.
13.	Governor frame.	27.	Bearing.
14.	Round-head screws.	28.	Lubricating wick.

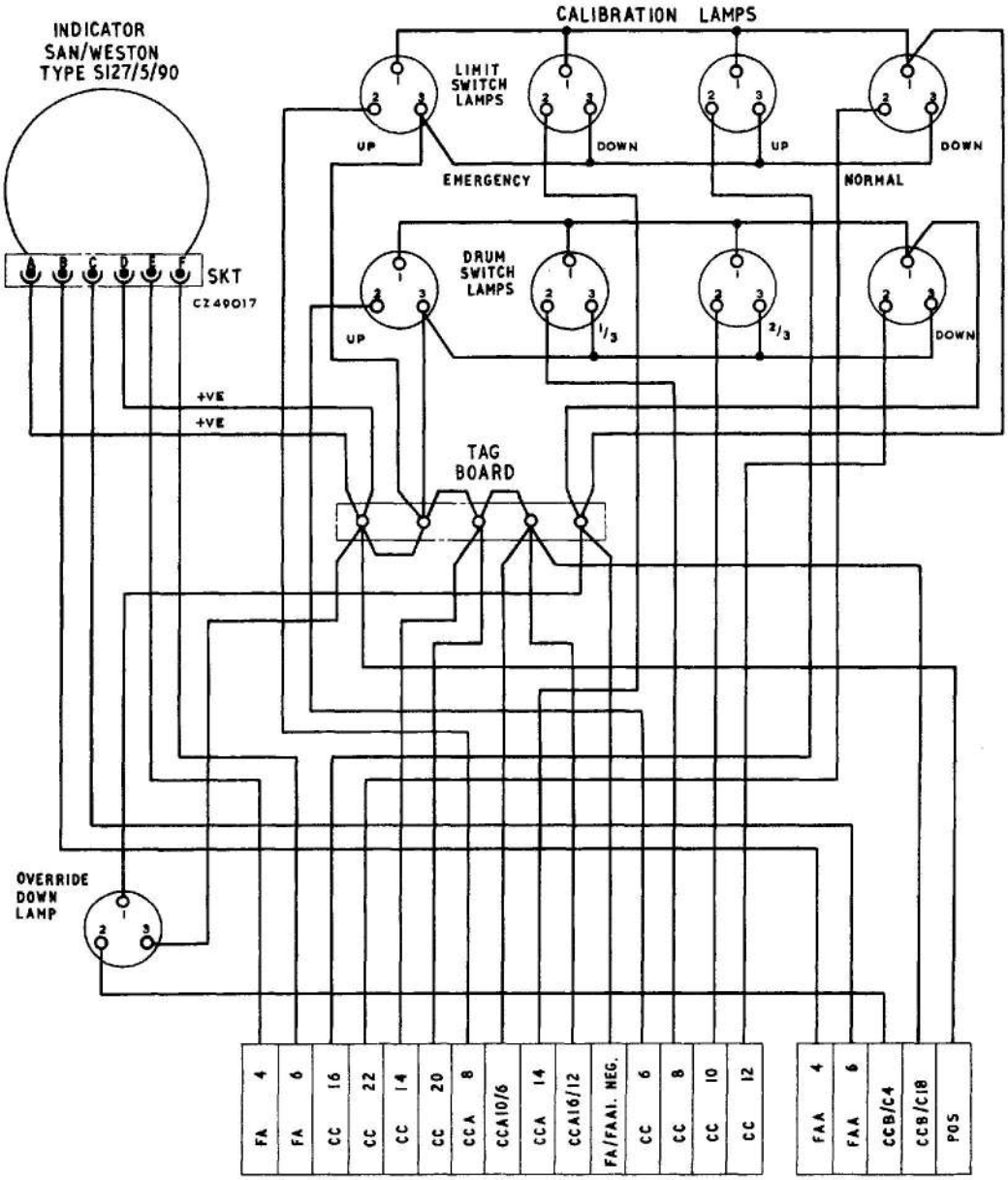

Fig.4. Test box circuit diagram

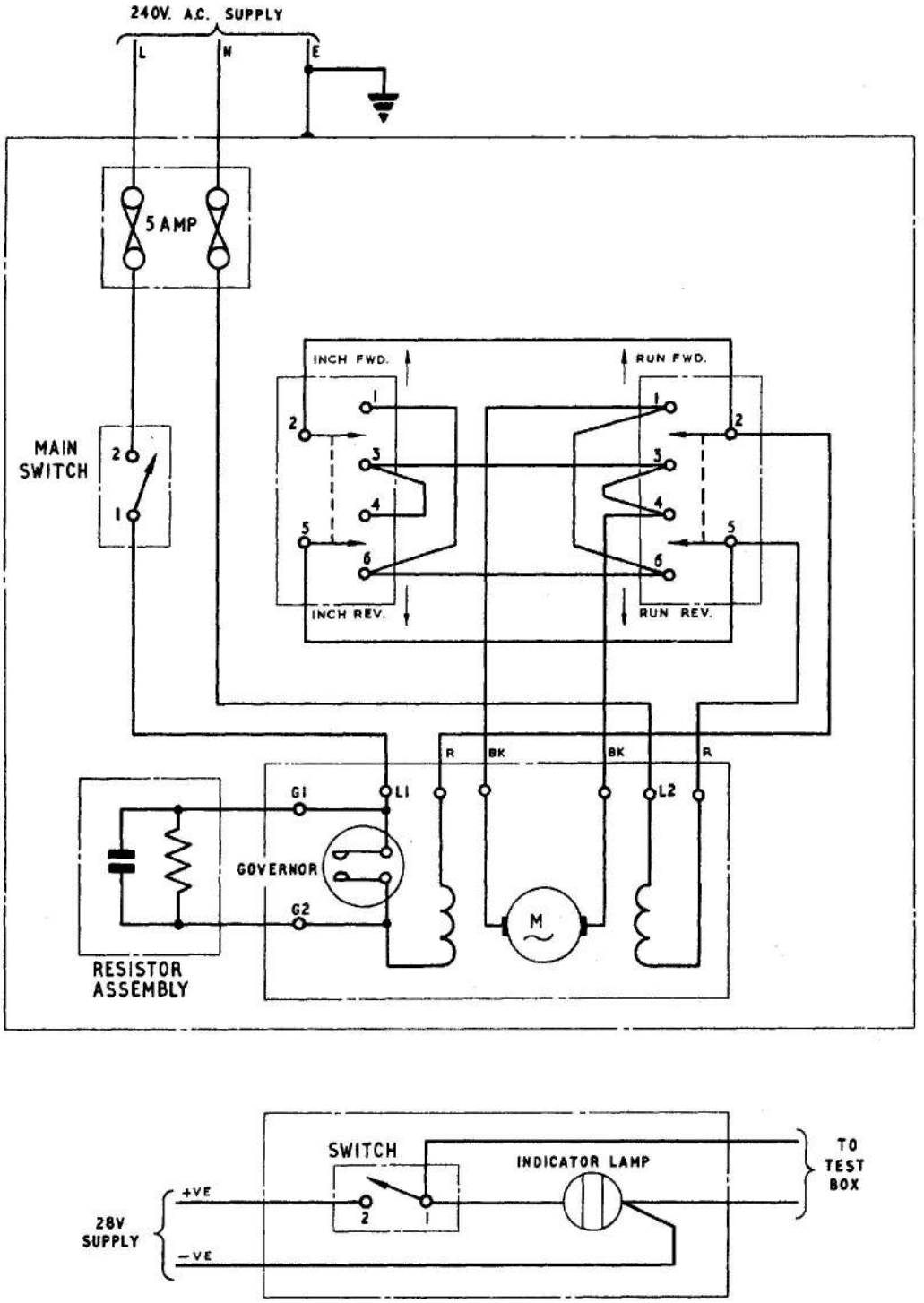

Fig.5. Motor circuit diagram

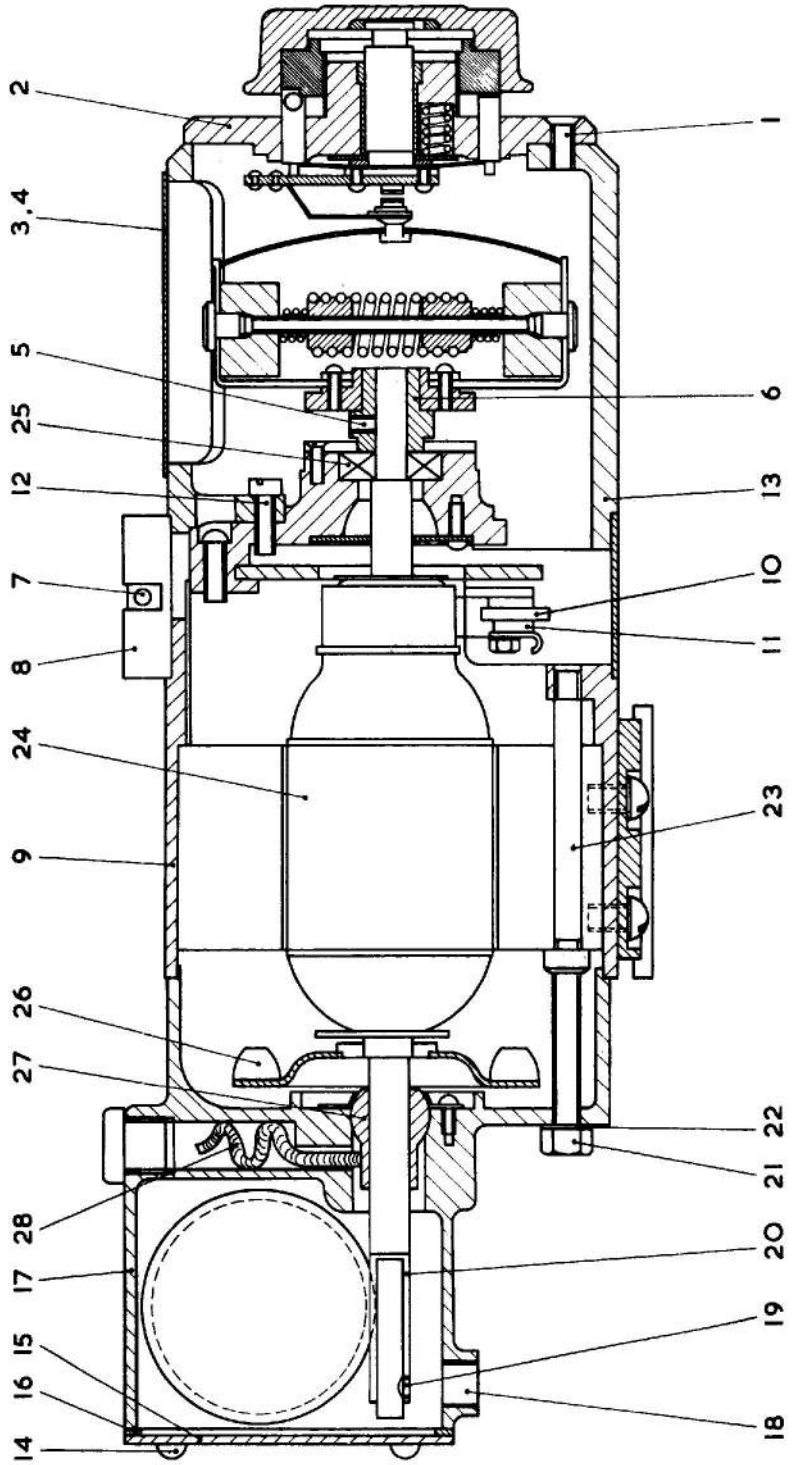

Fig.6. Sectional view of gearbox motor