

Group 4A

GYRO GUN-SIGHT AND CAMERA RECORDER

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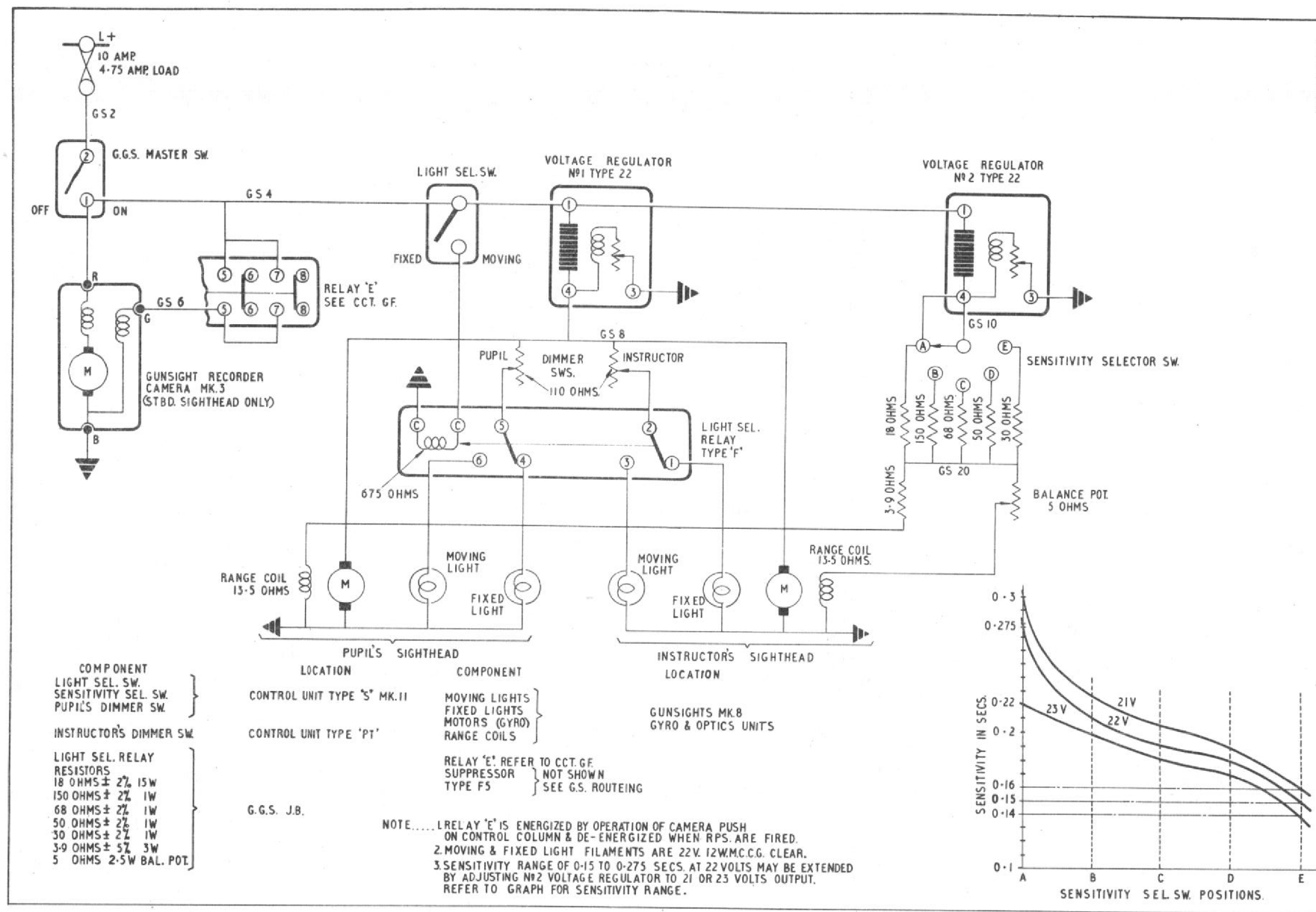


Fig.1 Power supply for gyro gun sight and camera recorder (theoretical)

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Introduction

1. This Group contains a description of the aircraft's gyro gun-sight installation and camera recorder, together with circuit diagrams of the system and details of the gun-sight mounting structure. For a description of the aircraft's armament system, reference should be made to Sect.5, Chap.1, Group G1, whilst detailed information on the standard items of equipment used, will be found in the Air Publications listed in Table 1.

DESCRIPTION**Gyro gunsights***General*

2. The dual gun-sight installation, is designed to give the pupil training under

flight conditions in the correct handling of the gun-sight. The sights are carried on fixed mountings (*para.10*) and provision is made for the fitment of a camera recorder on to the instructor's sight. When not in use this recorder may be placed in a stowage on the starboard side of the cabin. Supplies to the two sights are controlled by an ON/OFF master switch which is located on the centre instrument panel.

3. The two sights are electrically inter-connected and the graticule displays are identical. The instructor can therefore monitor on the reflector of his own sight, the operations made on, the pupil's gun-sight.

4. The installation is provided with two control units which are inter-connected with the gun-sights and camera recorder, by way of suitable cables to a junction box which is mounted on the starboard side of frame 7.

Combat controls

5. In order to control the illumination of each gun-sight, dimmers are provided in the control units located on the starboard shelf and the forward end of the port shelf for the instructor and pupil respectively. Range selection is accomplished by means of a sensitivity selector which gives range in four incremental steps, finally resulting in a 'caged' condition of the gyro. This selector is also located in the pupil's control unit on the port shelf.

6. The span knobs, which are mounted on each gun-sight, are used to correct the display graticules for difference in depression angles with target span. These relationships are given in Table 2.

Table 1**Equipment type and Air Publication reference**

Equipment Type										Air Publication	
Gyro gun-sights Mk.8	...	...	...	...	...	...	...	...	...	A.P.1275E, Vol.1, Sect.7	
Gyro gun-sight junction box	...	...	...	...	...	...	...	...	...	Hawker design	
Instructor's dimmer Type Pt. Mk.2											
Pupil's dimmer											
Sensitivity selector switch											
Voltage regulators, Type 22	...	...	...	...	...	...	...	...	...	A.P.4343B, Vol.1, Book 1, Sect.1	
Suppressors, Type F.5	...	...	...	...	...	...	...	...	...	A.P.4343C, Vol.1, Book 3, Sect.5	
Gyro gun-sight master switch, Rotax Type D.5404	...	...	...	...	...	...	...	...	...	A.P.4343C, Vol.1, Book 2, Sect.1	
Camera recorder, Mk.3	...	...	...	...	...	...	...	...	...	A.P.1355D, Vol.1, Sect.3	

Note . . .

With the selection of the lower valued resistors in the sensitivity control and hence increased currents, sensitivity is decreased. Selection at the opposite end of the scale increases the sensitivity.

Power supplies

7. The power supplies to the installation are derived from the aircraft's d.c. system, via a fuse in junction box No.2

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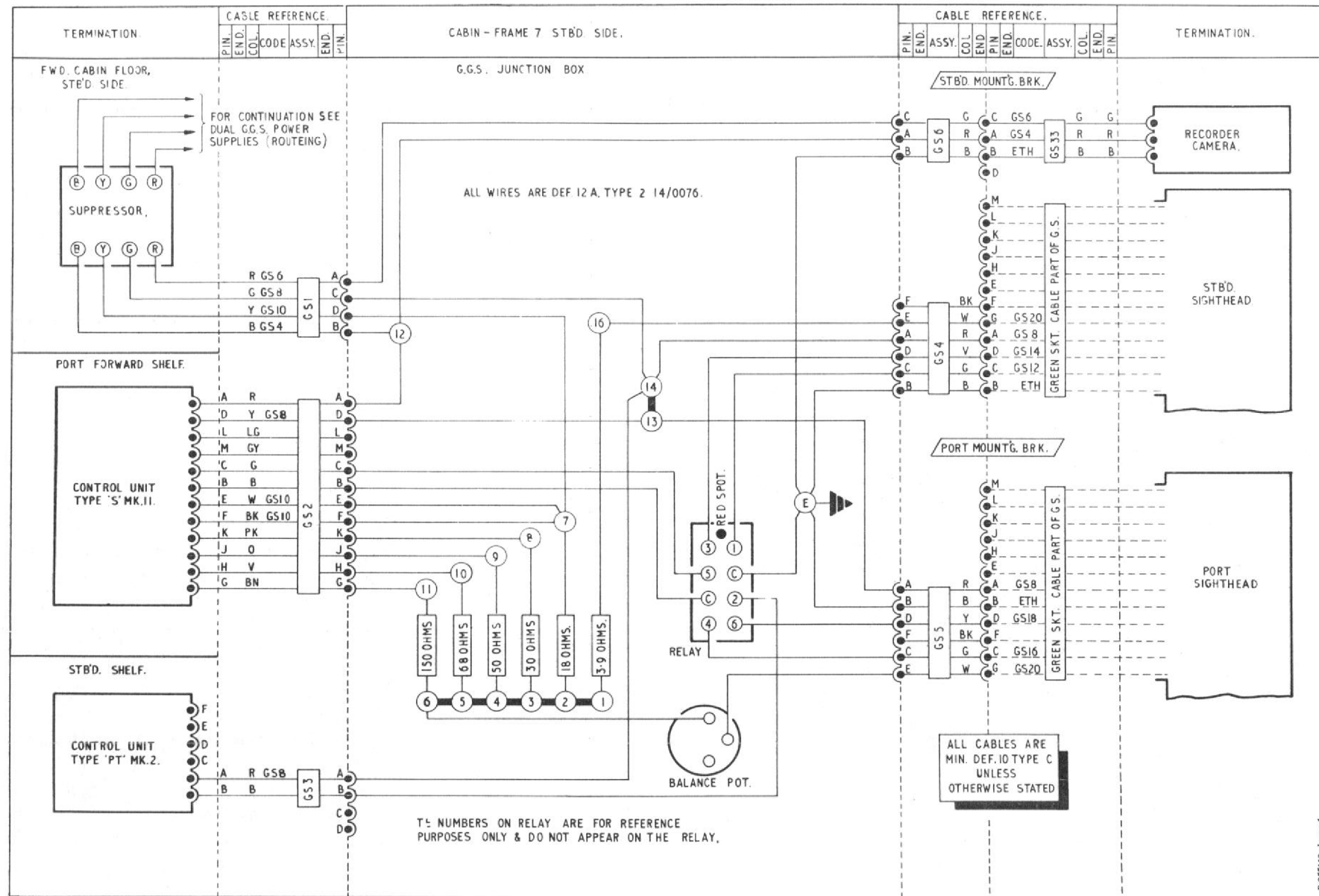


Fig.2 Gyro gun sight and camera recorder (routing)

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which feeds the gyro gun-sight master switch. To ensure that a constant voltage is supplied to the sights and control units, this main supply is fed through a pair of voltage regulators, located on the port side at the rear of the cabin. The regulators are provided with pre-set voltage controls and to eliminate radio interference, the regulated outputs are taken through suppressors which are carried in a mounting attached to the forward portion of the cabin floor.

Camera recorder

8. The camera recorder, which is fitted only to the instructor's gun-sight, is controlled by the camera relay (*operated by the camera push switch on the control column*) in the camera gun circuit (*Sect.5, Chap.1, Group G1*). When energized the relay will, if the gun-sight installation is running, complete the supply to the sol-

enoid of the camera recorder's claw mechanism. The claw mechanism will then draw the film across the path of the lens, and so record the target and graticule display on the gun-sight reflector.

9. Theoretical and routeing diagrams of the gun-sight and camera recorder installations are given in fig.1 and 2 and the theory and routeing diagrams of the electrical power supplies will be found in fig.1 and 3. For a full description of the gun-sights, control units and camera recorder, together with their operation, reference should be made to the Air Publications listed in Table 1.

Gyro gun-sight mountings

10. The mountings for the gyro gun-sights consist of two large castings, which project aft, one on each side of the central instrument panel. Each casting

is bolted at its forward end to the cross beam of frame 7 and is anchored at its centre to the instrument panel mounting tube extending across the top of frame 8. The seating faces at the rear end of each casting, to which the gun-sights are attached, incorporate light alloy profile packing pieces for the initial alignment of the sights.

SERVICING

General

11. The servicing required to maintain the gun-sights, control units, and camera recorder in an efficient condition is contained in the relevant Air Publications listed in Table 1, while the various standard serviceability tests which should be applied are mentioned in the following paragraph. Before servicing or removing any of the components in the installation, the aircraft must be rendered electrically safe (*Sect.5, Chap.1, Group A.1.*).

Test Procedure

12. Prior to testing the installation connect the Test set Type 1 (*Ref.No.8B/3324*) gyro and optics leads to the green socket of the port sight head, and the range drive leads to the green socket of the starboard sight head. Set the dimmer switches on the pupil's and instructor's control units to fully bright, and the sensitivity switch on the pupil's control unit to position 'A'. The sights should now be switched on and allowed to run for 10 minutes before proceeding with tests.

Table 2

Approximate depression angles for span knob settings

Span setting in feet	Depression angle in degrees
34	2.0
44	2.5
55	3.0
65	3.5
75	4.0

- (1) Connect the wander plugs of the Test set Type 1 to the gyro and optics adapter sockets A(+ve) B(-ve) and adjust the voltage by means of regulator No.1 trimmer until 22 volts is indicated on the Test meter.
- (2) Connect the wander plugs to the range drive adapter sockets A(+ve) B(-ve). The test set meter should read 22 volts.
- (3) Connect the wander plugs to the gyro and optics adapter sockets G(+ve) B(-ve), and observe the voltage reading on the Test set meter.
- (4) Connect the wander plugs to the range drive adapter sockets G(+ve) B(-ve), and adjust the voltage by means of the potentiometer in the junction box to the value observed in (3) above. Adjust the voltage by means of regulator No.2 trimmer until 5.6 volts is indicated on the Test set meter.
- (5) Select sensitivity settings B, C, D and E in turn on the pupil's control

unit. The following voltages should be indicated on the Test meter.

position B..... 6 volts

position C.....6.6 volts

position D.....6.8 volts

position E.....7.4 volts

- (6) Repeat test (5) above, with the wander plugs connected to the range drive adapter sockets G(+ve) B(-ve).
- (7) Connect the wander plugs to the gyro and optics adapter sockets C(+ve) B(-ve), with the light selector switch on the pupil's control unit selected to FIXED. Select dimmer switch on the pupil's control unit from fully bright to dim. The Test set meter should indicate 22 volts falling steadily as the dimmer is rotated to the dim position.
- (8) Repeat test (7) above with the wander

plugs connected to C(+ve) B(-ve) of the range drive adapter sockets and select the instructors dimmer switch from fully bright to dim.

- (9) Repeat tests (7) and (8) above with the wander plugs connected to D(+ve) B(-ve) of the range drive and gyro and optics adapter sockets, with the light selector switch on the pupil's control unit to MOVING.

REMOVAL AND ASSEMBLY

General

13. The recommended method of removing the gun-sights from their mountings is contained in A.P.1275E, Vol.1 and, as the camera recorder is secured to the gun-sight by spring loaded lugs, no difficulties should be experienced in removing this component. Once access has been gained, the removal of the remaining components should present no difficulties, but upon re-assembly it is important that the sight head range drums are motored to the 200 yd. position.

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