

Chapter 3 ALIGHTING GEAR
(Completely revised to include Mod.524)

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TABLE 1

Equipment, type and A.P. reference

Equipment type	Ref. No.	A. P. reference
Indicator	5CX/5762 ...	A.P.4343E, Vol.1, Book 4, Sect.18
Clamp, securing	6A/2823 ...	A.P.4343E, Vol.1, Book 4, Sect.18
Microswitch	5CW/11254 ...	A.P.4343C, Vol.1, Book 1, Sect.2
Microswitch	5CW/9108 ...	A.P.4343C, Vol.1, Book 1, Sect.2
Lamp D. No.4	5CX/2729 ...	A.P.4343E, Vol.1, Book 1, Sect.1
Solenoid	5CW/8432 ...	A.P.4343E, Vol.1, Book 1, Sect.1
Override switch	5CW/5057 ...	A.P.4343C. Vol.1, Book 1, Sect.1
Lamp filament (indicator)	5L/9959118 ...	
Lamp filament (external lamp)	5L/9953202 ...	

Introduction

1. This chapter contains a description of the alighting gear position indicators and selector lock circuits. Details of the circuit routeing and theoretical operation is given in fig.1 and 2. Reference should be made to the publications listed in Table 1 for more detailed information concerning the equipment used and for the servicing necessary to maintain them in an efficient condition.

Alighting gear position indicators

2. The alighting gear position indicators mounted on the front and rear cockpit instrument panels show by red and green lamps

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the position of each wheel unit of the alighting gear. An external lamp fitted to the underside of the nose will also indicate the position of the alighting gear to the ground control staff. The indicating lamps are operated by microswitches attached to each wheel unit.

3. The indicator has separate red and green lamps for each wheel unit of the alighting gear and will function as shown:-

- (1) Alighting gear down and locked-
Three green indicator lamps and the external lamp illuminated.
- (2) Alighting gear selected UP unlocked and travelling-
Green lamps and external lamp extinguished.
Three red indicator lamps illuminated.
- (3) Alighting gear up and locked-
All lamps extinguished.

Each wheel unit indicator circuit operates independently, thus, if a unit does not move to the position selected, it will be immediately apparent.

4. The construction and control of the alighting gear is described in Sect.3, Chap.5. A down-lock microswitch is fitted to each wheel-unit break-strut and an up-lock microswitch to each up-lock assembly. Movement of the alighting gear from one selected position to the other is motivated by three hydraulic jacks, one to each wheel-unit.

5. The circuit (fig.1) is shown with the alighting gear in the locked-down position and is self-explanatory. The airspeed indicators alighting gear warning flags (Sect.7,B, Chap.6) are connected to be operated from the port wheel unit down-lock microswitch.

DESCRIPTION

Nose-wheel unit

6. The nose-wheel break-strut embodies a locking mechanism and release trigger, and a microswitch control lever. The control lever is connected by an adjusting rod to a cranked lever which actuates the microswitch. The switch is mounted on the break-strut radius rod and is protected against damage by a debris guard.

7. When fully retracted the wheel-unit is locked in position by an up-lock assembly located at the rear of the wheel bay. The up-lock assembly embodies a locking hook and spring-loaded plunger and engages with a locking pin mounted on the wheel-unit shock-absorber strut. The up-lock microswitch, which is mounted on the up-lock assembly is actuated by an adjustable T bar secured to the spring loaded plunger.

Main-wheel units

8. The construction of the break-strut and down-lock for each main-wheel unit is similar to that described for the nose-wheel unit, but differs in the disposition of the microswitch and operating levers. The up-locks are also functionally similar to that described for the nose-wheel unit and are located at the aft end of the wheel bays.

The up-lock microswitch is actuated by the locking lever through an adjustable screw fitted with a lock nut.

Alighting gear position indicators

9. Each indicator contains six pairs of lamps mounted in a spider container in the miniature flangeless case which is secured to the panel by a clamp. When illuminated the lamps are visible through a coloured disc set in the indicator face. The brilliancy of the lamps can be reduced by means of a night screen which is operated by a lever positioned in the centre of the indicator face. The lamp spider can be easily removed for filament replacement after unscrewing a centrally-positioned knurled screw.

10. The amber external lamp is fitted in the nose bay between frames 2A and 3 and is supplied through the three down-lock microswitches which are connected in series. The lamp will be illuminated only when all three wheel units are correctly locked down.

Alighting gear selector lock

11. A solenoid-operated lock is fitted in the rear cockpit alighting gear selector box to prevent selection of alighting gear UP until after a safe flying speed has been attained. When the solenoid is de-energized a plunger is extended to cause a catch assembly to lock the selector lever in the alighting gear DOWN position. When the aircraft has reached a safe flying speed an airspeed-operated switch will cause the solenoid to be energized and disengage the locking catch. An override switch in each cockpit can be used to operate the solenoid

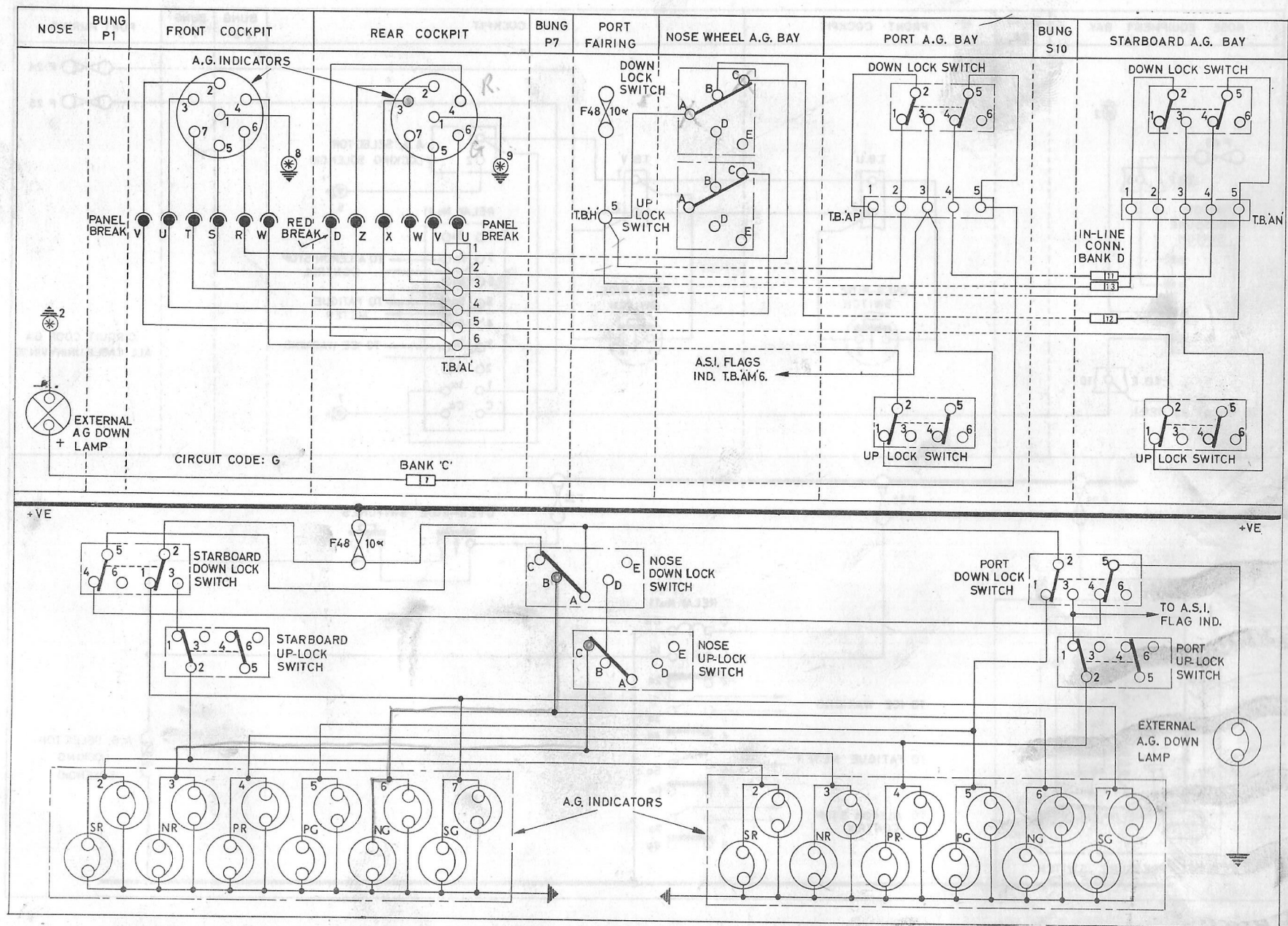


Fig. 1. Alighting gear indicators (routeing and theoretical)

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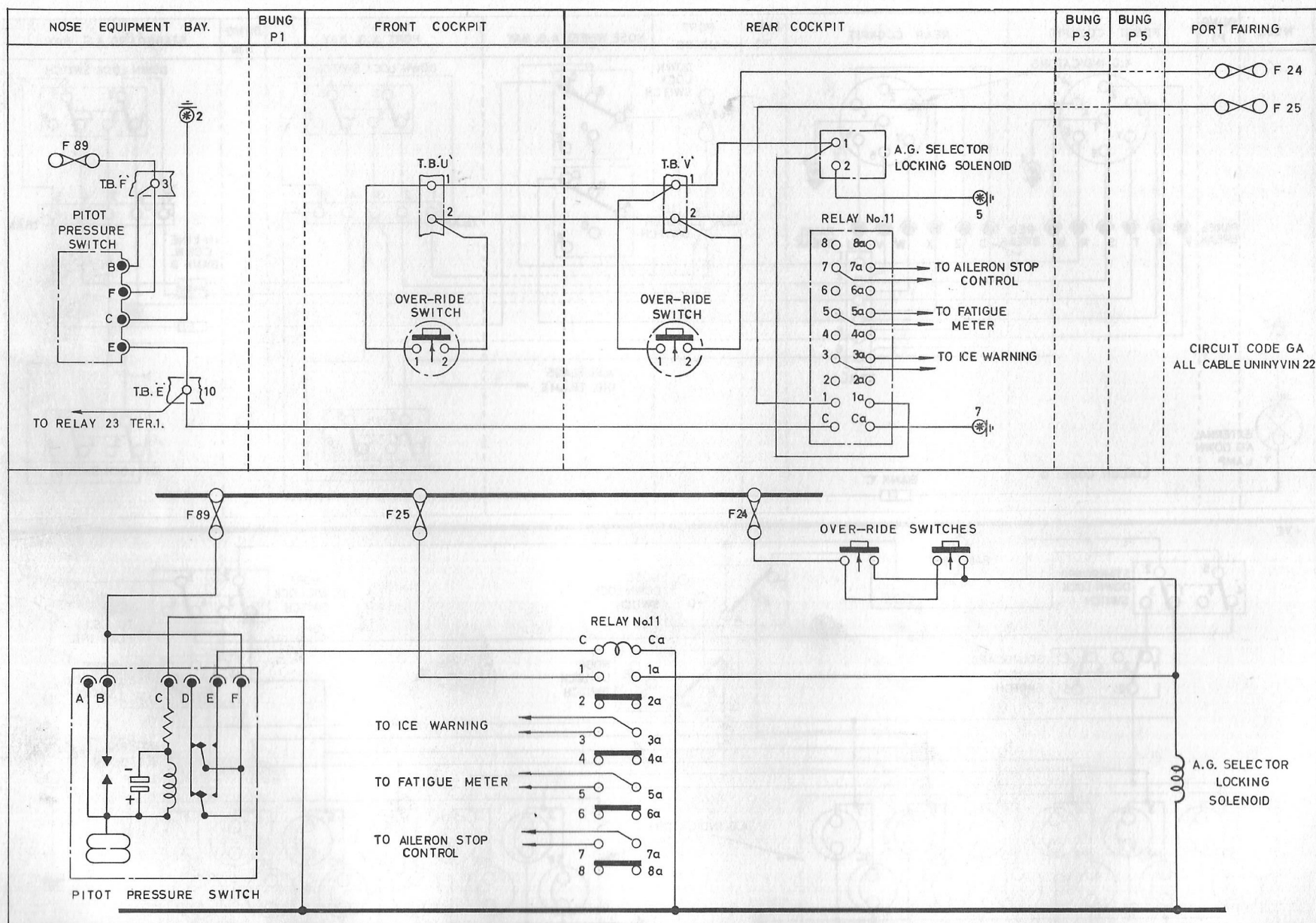


Fig. 2. Alighting gear selector lock (routing and theoretical)

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if it becomes necessary to retract the alighting gear at lower speeds.

12. The airspeed-operated switch is connected to energize relay No.11 and is described in detail in Sect.7,A, Chap.4. Contacts 1 and 1A of relay No.11 provide the supply to energize the solenoid and withdraw the plunger.

SERVICING

General

13. For the purpose of the following tests the aircraft is supported on jacks and alighting gear selection is made using the override switches to energize the solenoid lock. No adjustment must be made until the wheel units have been set up and checked as described in Sect.3, Chap.5.

Nose-wheel unit microswitches

14. With the nose-wheel unit locked down, adjust the down-lock microswitch adjusting rod so that the toe of the cranked lever just

touches the end of the fully extended microswitch plunger. Adjustment is made by rotating the adjusting rod eye-bolt by half turns, if necessary a small gap of 0.010 in. maximum is permissible. On completion tighten the eye-bolt lock nut.

15. With the nose-wheel unit locked down, check that the up-lock microswitch is fully extended. Retract the wheel unit and check that it is correctly locked up. Adjust the T rod on the up-lock assembly to depress the switch plunger 0.090 in. to 0.110 in..

Main-wheel units microswitches

16. The microswitches fitted to the up-lock and down-lock assemblies are Type 402 EN-N3. The switch plunger movement from the free position to the operated position (free travel) is 0.040 in., the maximum over travel is 0.45 in., total permissible travel is 0.49 in.

17. With the main-wheel units locked

down, adjust the down-lock microswitch adjusting rod so that there is a gap of 0.002 in. to 0.016 in. between the toe of the cranked lever and the switch plunger. Adjustment is made by rotating the eye-bolt by half turns; on completion tighten the eye-bolt lock nut.

18. With the main-wheel units locked down, check that the up-lock microswitch plunger for each wheel unit is fully extended with the main-wheel units retracted and locked up adjust the switch actuating screw of the up-lock so that the switch is depressed 0.040 in. to 0.490 in.

Note...

If the down lock microswitch cables are removed during servicing, replacement must be in accordance with fig.3.

Alighting gear position indicators

19. With an external d.c. supply connected to the aircraft carry out full retraction tests and check that the lamp indications are as described in para.3. After completion and using a pitot static test set as described in Sect.7,A, Chap.4, ensure that the locking solenoid is energized at the correct air speed.

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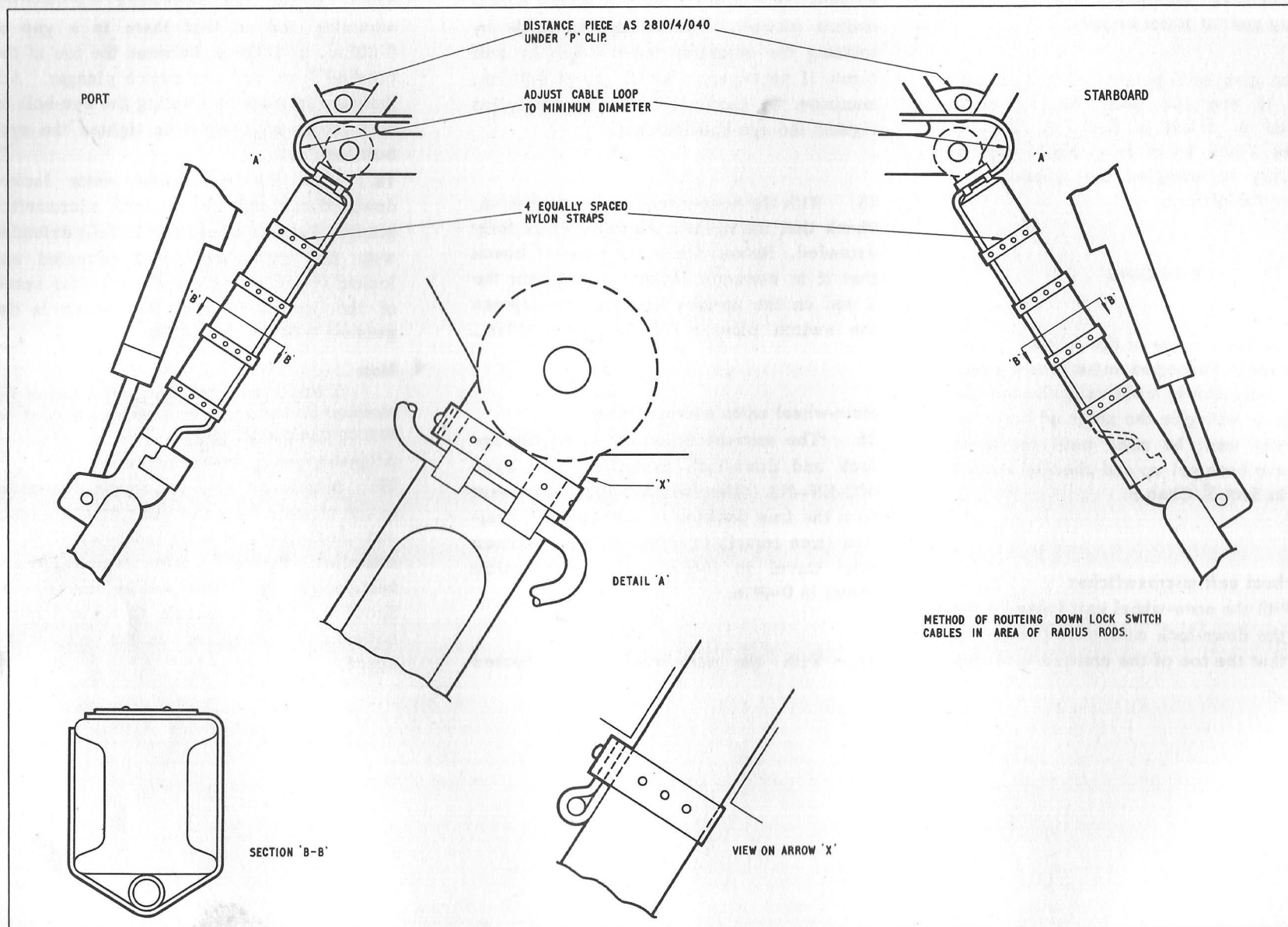


Fig. 3 Down lock microswitch cable routing

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A.P.101B-1801-1B, Sect.6,D, Chap.3
A.L.40, Mar.68

LIST OF APPENDICES

	App.
◀ <i>Alighting gear (Mod.657)</i>	1 ▶

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Appendix 1 ALIGHTING GEAR

(Modification 657)

Introduction

1. This appendix describes the effect on this chapter of Mod.657: To make provision for and introduce microswitch 5CW/11254. This modification supercedes Mod. 524 which is included in Chap.3 and affects the nose-wheel down-lock and up-lock assemblies only.

Description

2. The new microswitches are not directly interchangeable with those that they replace due to dimensional differences and it is necessary to elongate the switch plate mounting holes. The cable loom connecting the down-lock microswitch to the indicator

circuits is clipped to the switch mounting plate. The length of the terminal wires of this cable must be kept to a minimum and must not protrude more than 0.10 in. from the end face of the switch. The debris guard is replaced by a fibre block.

3. Microswitch operation remains as described in Chap.3. With unit in the locked-down position, the eye bolt of the adjusting rod is adjusted by half turns, the permissible gap between the toe of the down-lock cranked lever and the switch plunger must be 0 to 0.010 in. With the wheel unit in the locked-up position, the T bar of the up-lock is adjusted so that the microswitch plunger is depressed 0.09 to 0.11 in..

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