

Chapter 11  
ALIGHTING GEAR CONTROLS

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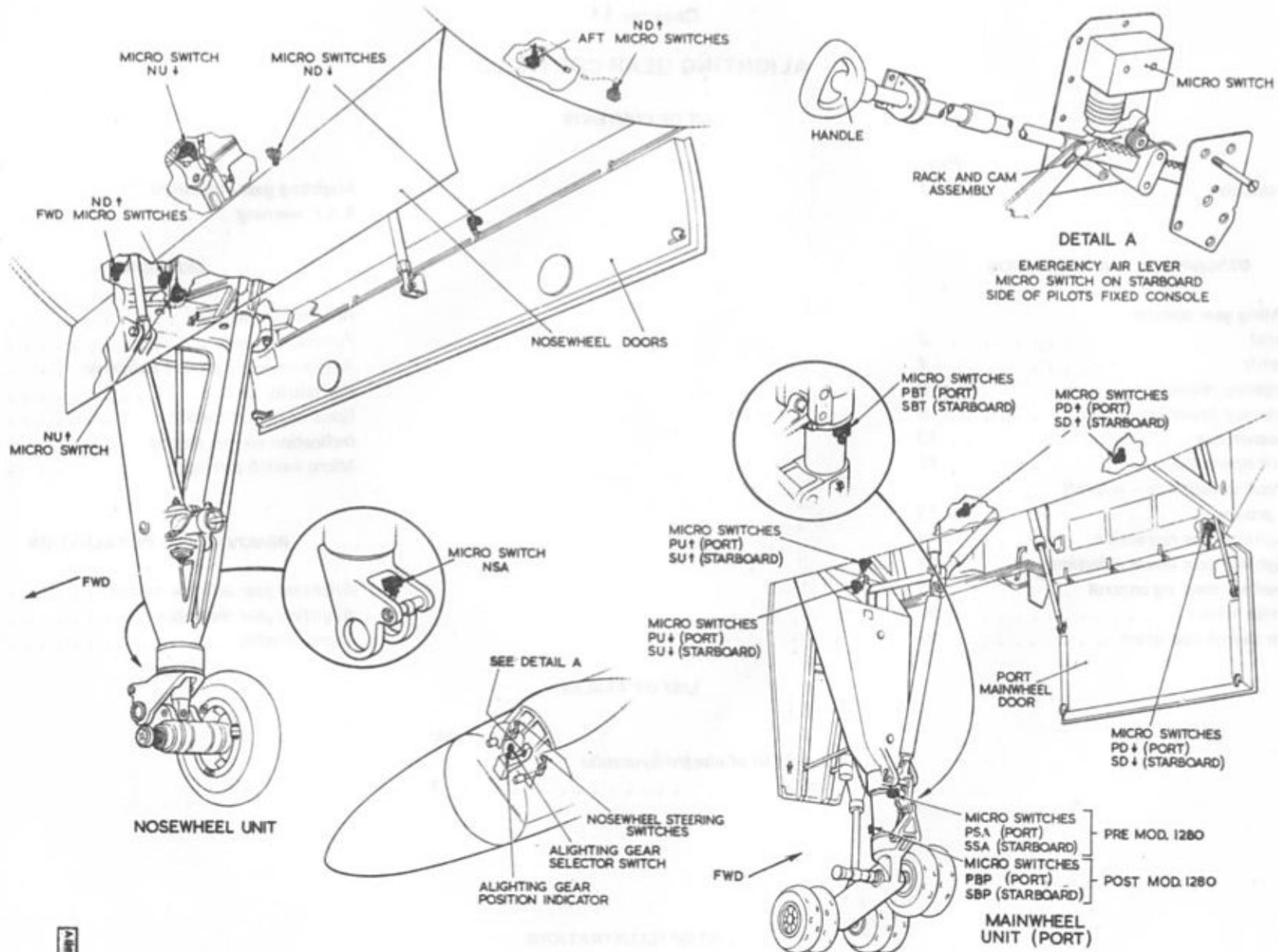


Fig. 1 Alighting gear details  
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**Introduction**

1. Normal operation of the alighting gear and nose wheel steering is controlled by a series of electrically operated valves in the main hydraulic system. A descrip-

tion of the electrical control circuits is contained in this Chapter. Theoretical circuit diagrams are included and a component illustration is shown in fig.1. Descriptive and servicing notes for the

hydraulic system are given in Sect.3, Chap.6 of this publication. With this amendment information on Mods.1280, 1639, 1906, 1988 and 2180 is included.

**ALIGHTING GEAR CONTROL****General**

2. The alighting gear comprises two main wheel units retracting forwards and upwards into the mainplane, and a single nose wheel unit, retracting rearwards into the fuselage aft of the crew's compartment. The units, operated by hydraulic jacks, are controlled by a push-button selector switch on the pilots' centre instrument panel. An alighting gear position indicator is fitted to the panel adjacent to the selector switch.

3. When fully extended, all wheel units are secured in the down position by hydraulically-operated downlock jacks. To enclose the wheel units in their bays, fairing doors are provided which are also operated by hydraulic jacks. Micro switches are employed to harmonize movement of the door jacks with that of the alighting gear to complete or break the supply to the electrically-operated control valves in the hydraulic system. Incorporated into the nose wheel unit is a system providing power steering for 47 deg. 15 min. to either port or starboard.

**Controls**

4. As stated in para.2, operation of the electrically-operated valves for the alighting gear units, down locks and doors is controlled by a push button selector switch labelled UP - DOWN on the centre portion of the pilots' instrument panel. The selector switch is a Dowty, Type C5182Y Mk.4 or Type C2524Y, Ref.No. 5CW/4506. When Mod.1262 is incorporated a Type C5182Y Mk.4D or Type C2524Y Mk.D, Ref.No. 5CW/6984, is fitted.

**DESCRIPTION AND OPERATION**

5. Embodied in the selector switch is a mechanical locking device to prevent inadvertent selection of the alighting gear UP when the aircraft is on the ground. The lock is electrically released when the weight of the aircraft is relieved from the main wheel units (i.e. on take-off, or when jacked up) by the action of two micro switches operated by the movement of the wheel bogies.

6. The electrical supply to the nose wheel steering control valve and stop valve solenoids is controlled by two push switches, one fitted to each pilot's column. The supply from the push switches to the stop valve solenoids is routed via a stepped drum switch, Dowty Type C1220Y, Mk.107, whose selection is controlled mechanically by the rudder pedals.

**Emergency retraction**

7. For emergency retraction of the alighting gear, the UP push button lock may be overcome by rotating the UP push button flange, marked EMERGENCY, in a clockwise direction. This will allow the UP button to be depressed using normal finger pressure. After this operation the flange can only be returned to its original position by the use of Dowty service tool Part No. S.T.1157.

**Emergency lowering**

8. The main electrical supply to the alighting gear circuits is fed through the normally closed contacts of a micro switch adjacent to, and operated by, the emergency air valve control lever located on the starboard side of the pilots' console (fig.1).

9. Should emergency lowering of the alighting gear become necessary, the movement of the lever to the EMERGENCY position will, by the action of a spring-loaded cam and rack assembly, operate the micro switch to cut off the electrical supply to all the electro-hydraulic valves and also energise a control relay (No. 160). The contacts of this relay will maintain the supply to the nose wheel steering circuit so that steering facilities will be available when the aircraft has landed.

**Micro switches**

10. Twenty-three micro switches are employed in the alighting gear control and indication circuits. The positions of these are illustrated in fig.1. Pre Mods. 1639 and 1906, micro switches Dowty, Type 1831Y, Ref.No. 5CW/6978 are fitted. Post Mod.1639 the micro switches on the main and nose wheel units are changed to Dowty, Type D.N.1241.Z, Ref.No. 5CW/7412; post Mod.1906 the micro switches on the aircraft structure are changed to Honeywell, Type 402EN-N3, Ref.No. 5CW/9108. Both types of micro switches are described in A.P.4343C, Vol.1, Book 1, Sect.2. It should be noted that 'operate' implies depressed and that the positions of the micro switch contacts are as follows:-

Dowty, Ref.No. 5CW/7412 and Honeywell, Ref.No. 5CW/9108

Depressed - contacts 2-3 and 5-6 are made.

Released - contacts 2-1 and 5-4 are made.

CIRCUIT SHOWN FOR AIRCRAFT ON GROUND.

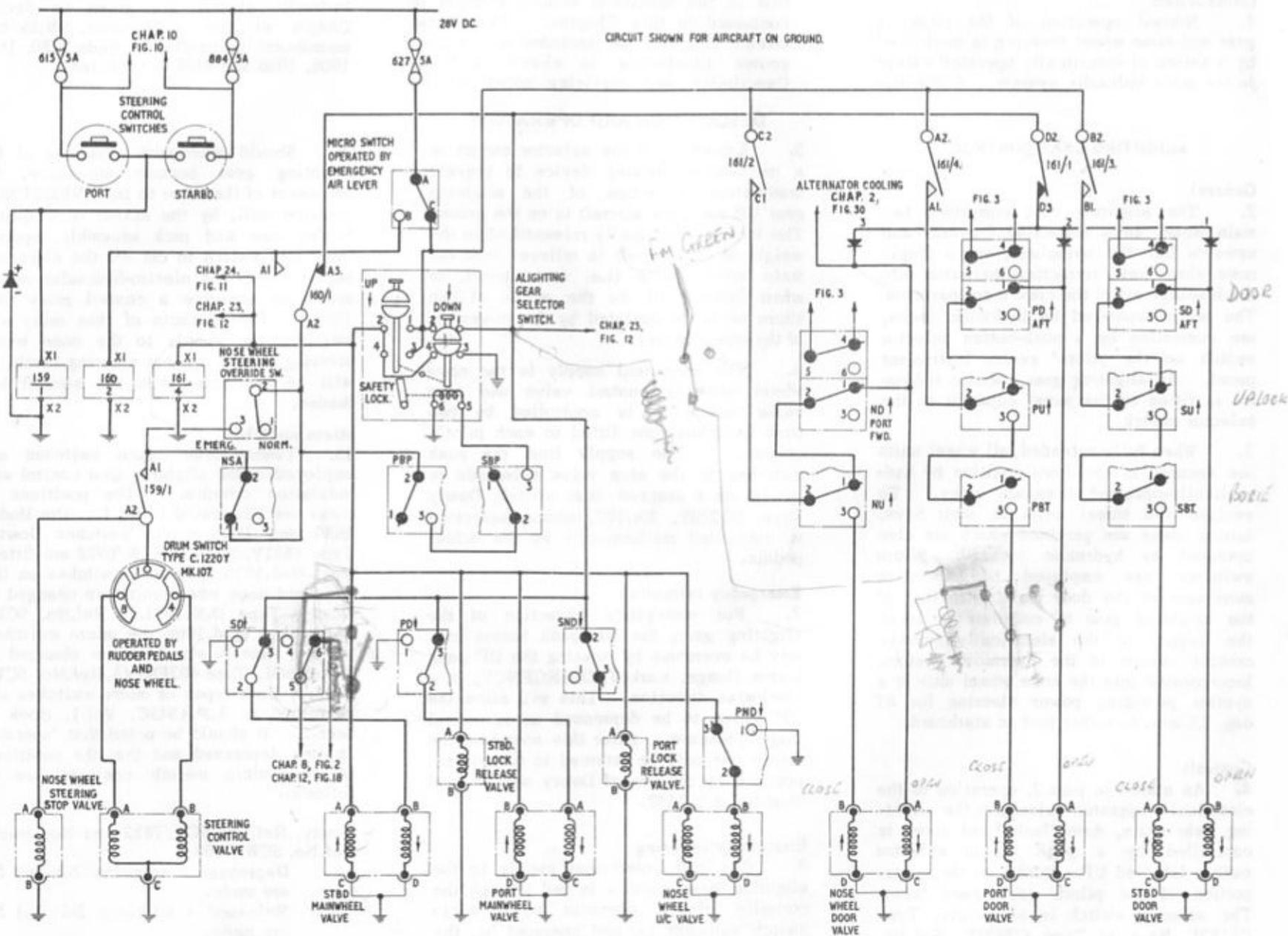


Fig.2 Alighting gear control circuit

◀Nose wheel override switch terminal 3 now connected to terminal A1 of relay 159 ▶

11. Details of the micro switches are as follows:-

*P.B.T.(1) - Port bogie trim*

This switch is located on the outboard face at the bottom of the port main leg. The switch is operated when the bogie is correctly aligned.

*S.B.T.(1) - Starboard bogie trim*

This switch is located on the outboard face at the bottom of the starboard main leg. This switch also is operated when the bogie is correctly aligned.

*P.B.P.(1) - Port bogie position*

This switch together with the starboard bogie position switch performs the same function as the former port and starboard shock absorber switches (PSA and SSA). Mod.1280 introduces modified main wheel units (Dowty Rotol Mod. AC/5309) which incorporate the new switches. The switch is mounted on the port leg just above the bogie. When the aircraft gathers speed during take-off the bogie extends towards the trail position and in doing so causes a striker lever to operate the micro switch.

*S.B.P.(1) - Starboard bogie position*

This switch is situated in a similar position to the above, but on the starboard leg, and is operated in the same manner.

*N.S.A. (1) - Nose shock absorber*

This switch is located on the lower forward face of the nose wheel unit leg. The switch is operated when the shock absorber is extended, (i.e., when the weight of the aircraft is relieved from the nose wheel).

*PU † (1) - Port unit down switch*

This switch is located on the port main wheel unit down lock assembly and is operated when the port main leg is locked down. The switch is connected into the indicator circuit and also the mach trim

installation (Sect.7, Book 3).

*SU † (1) - Starboard unit down switch*

This switch is located on the starboard main wheel unit down lock assembly and is operated when the starboard main leg is locked down. The switch is connected in the indicator circuit.

*NU † (1) - Nose unit down switch*

This switch is located on the nose wheel down lock assembly and is operated when the nose wheel is fully locked down. The switch is connected in the indicator circuit.

*PU † (1) - Port main wheel unit up switch*

This switch is located on the pivot tube of the port main wheel leg and is cam operated. The switch is operated when the port unit is fully retracted.

*SU † (1) - Starboard main wheel unit up switch*

This switch is located on the pivot tube of the starboard main wheel leg and is cam operated. The switch is operated when the starboard unit is fully retracted.

*NU † (1) - Nose wheel unit up switch*

This switch is located on the aft face of the front pressure bulkhead in the nose wheel bay, and is operated when the nose wheel is fully retracted.

*PD † (2) - Port main wheel door up switches*

These two switches are located one at each door catch hook on the inboard wall of the port main wheel bay. The switches are operated when the port door is fully closed.

*SD † (2) - Starboard main wheel door up switches*

These two switches are located one at each door catch hook on the inboard wall of the starboard main wheel bay. The switches are operated when the starboard door is fully closed.

*ND † (4) - Nose wheel doors up switches*

These four switches are located in pairs,

in the nose wheel bay. One pair is located adjacent to the NU † micro switch, the other pair on the bulkhead at former 75. All four switches are operated when the nose wheel bay doors are fully closed. Contacts 5-6 on the port aft micro switch ND † are used in the special bombing circuit.

*PD † (1) - Port main wheel door down switch*

This switch is located on the forward outboard hinge bracket in the port main wheel bay, and is operated when the door is fully open.

*SD † (1) - Starboard main wheel door down switch*

This switch is located on the forward outboard hinge bracket in the starboard main wheel bay, and is operated when the door is fully open.

*PND † (1) - Port nose wheel door down switch*

This switch is located towards the rear end of the port door hinge in the nose wheel bay. It is operated when the port door is fully open.

*SND † (1) Starboard nose wheel door down switch*

This switch is located towards the rear end of the starboard door hinge in the nose wheel bay. It is operated when the starboard door is fully open.

**Circuit operation**

12. The operation of the alighting gear control circuit is contained in the following paragraphs, and reference should be made to the theoretical circuit diagram fig.2. The indication circuit is contained in fig.3.

*Circuit conditions - aircraft on ground*

13. It will be seen on reference to fig.2 that a 28-volt supply to the alighting gear control circuit is fed from fuse 627, via



the normally made contacts A-C of the emergency air lever micro switch. It will also be seen that:-

- (1) The up selector button cannot be depressed because the safety lock solenoid within the selector switch is isolated from the supply. (The circuit is isolated by the PBP and SBP micro switches).
- (2) The port main wheel down valve solenoid is energised via fuse 627, contacts A-C of the emergency air micro switch, the down selector switch contacts 2-1 and contacts 2-3 of micro switch PD↓.
- (3) Similarly the starboard main wheel down valve solenoid is energised via the same supply circuit and contacts 2-3 of the micro switch SD↓. Contacts 5-6 of this switch provide a circuit for the A.A.P.P. bleed valve control switch (Chap. 8 and Chap.12).
- (4) The nose wheel down valve is also energised by the same supply circuit and contacts 2-3 of micro switches SND↓ and PND↓ (in series).
- (5) The port, starboard and nose wheel door open valve solenoids are energised via fuse 627, the emergency air micro switch contacts A-C, the selector switch down button contacts 2-1 and the normally closed relay contacts 161/L. It should be noted that a blocking rectifier has been inserted in each feed line to the doors open valve solenoid.
- (6) A supply is available for the nose wheel steering circuit from fuse 627, via the emergency air micro switch, contacts 2-1 of the selector switch down button, normally closed relay contacts 160/1 and contacts 2-1

of micro switch NSA. It should be noted that the steering circuit cannot be completed until relay 159 is energised by the operation of either one of the two pilots' steering control switches (para.26).

#### *Alighting gear retraction*

14. As soon as the weight of the aircraft is relieved from the main wheel units and the wheel bogies move towards the trail position, the movement of the bogies cause striker levers to operate the PBP and SBP micro switches to close contacts 2-3. This action will connect a supply from fuse 627, via the emergency air micro switch contacts A-C, the selector switch down contacts (2-1), the normally closed relay contacts 160/1, contacts 2-3 of switches PBP and SBP in series, to energise the lock release solenoid in the selector switch.

15. This action will permit selection of alighting gear up, and when the up button is pressed the following circuit action will take place:-

- (1) The coil of relay 161 will be energised via fuse 627 and the selector switch.
- (2) The port and starboard down lock release valve solenoids will be energised to release the down locks.
- (3) The port, starboard and nose wheel up valve solenoids will be energised via the up button contacts of the selector switch.

It will be seen that relay contacts 161/2, 161/3 and 161/4 will now have been operated to close. The opening of contacts 161/1 will cut off the direct supply to the doors open valve solenoids, but a supply will still be available via the now closed contacts 161/2, 161/3, 161/4 and the appropriate up-lock and door micro switches.

16. As the main wheels are being retracted, the bogie trimmer jack is shortened. The sliding tube is consequently raised and the main wheel bogies are each pulled almost into line with each main wheel fitting. This places the bogie assembly in the correct attitude for stowage in the aircraft compartment. As each bogie travels into its respective main fitting, micro switches PBT and SBT will operate to make contacts 2-3. These switches are wired in series with the uplock micro switches (PU↑ and SU↑) and the door close micro switches (PD↑ and SD↑). The sequencing of the micro switches ensures that a supply to the door open valve solenoids is maintained until the bogie is correctly trimmed and the main wheels are fully retracted and stowed.

17. When the main wheels are fully retracted the up-lock micro switches PU↑ and SU↑ will operate to make contacts 2-3. This action will interrupt the feed to the door open valve solenoids, and connect the supplies via relay contacts 161/4 and 161/3, contacts 2-3 of switches PU↑ and SU↑ and contacts 2-3 of switches PBT and SBT to energise the port and starboard main wheel doors closed solenoids.

18. As the main wheel doors begin to close, micro switches SD↑ and PD↑ will be released to make contacts 2-1, this action will prepare the sequence circuit for down selection. When the doors are fully closed micro switches PD↓ and SD↓ will operate to make contacts 2-3 and 5-6, the latter contacts being used in the indicator circuit. The alighting gear main wheel up valve solenoids and the main wheel door close valve solenoids will remain energised as long as the alighting gear remains selected UP.

19. As soon as the weight of the aircraft is relieved from the nose wheel, the micro switch NSA will operate to make contacts 2-3 which will isolate the nose wheel steering circuit. The

nose wheel unit will commence to retract, the up valve solenoid being energised via the up contacts of the selector switch.

20. When the nose wheel unit is fully retracted, the up-lock micro switch NU † will be operated to make contacts 2-3. This action will break the supply to the nose wheel doors open valve solenoid, and connect the supply to the nose doors close solenoid.

21. As the nose wheel doors begin to close, micro switches PND † and SND † which are wired in series will be released to make contacts 2-1, isolating the nose wheel down solenoid, and preparing the circuit for down selection. When the nose wheel doors are fully closed, micro switch ND † will operate to make contacts 2-3. The nose wheel unit up valve and doors closed valve will remain energised as long as the selector switch remains in the UP position.

#### *Alighting gear down selection*

22. Selection of the alighting gear DOWN will de-energise relay 161 and its contacts will revert to their normal position. It will now be seen that contacts 161/1 will connect the supply direct to the main and nose wheel doors open valve solenoids. As the doors commence to open, micro switches PD †, SD † and ND † will be released to make contacts 2-1, thus preparing the sequencing circuit for future UP selection.

23. When the nose wheel doors are fully opened, micro switches PND † and SND † on the nose wheel door hinges will be operated to make contacts 2-3, thus connecting a supply to the nose wheel down valve. Similarly, when the main wheel doors are fully opened, micro switches SD † and PD † will be operated to make contacts 2-3, thus connecting a supply to each main wheel unit down valve. Note that the down lock valves will have been de-energised

when the selector down button was pressed.

24. When all wheel units are fully extended and locked down, micro-switches PU †, SU †, and NU † will have reverted to their normal positions, and as the weight of the aircraft is taken on the main wheels, the selector switch safety lock will become effective. When the nose wheel shock absorber is compressed, micro-switch N.S.A. will revert to the released position and a supply will be available for the nose wheel steering.

### NOSEWHEEL STEERING CONTROL

25. The nosewheel steering stop valve solenoid can be energised to allow nose-wheel steering, only when the aircraft is on the ground and the weight of the aircraft is on the nose-wheel unit. Control is provided by two push-switches situated one on each pilot's control column. Reference to Fig.2 will show that when either push-switch is depressed, relay No.159 will be energised closing contact 159/1. A supply will now be fed from fuse 627 to the nosewheel steering stop valve via the emergency air micro-switch, the 'down' side of the selector switch, relay contacts 160/1, contacts 1-2 of the N.S.A. micro-switch and relay contacts 159/1. The same supply is linked to terminal 1 of the drum switch.

#### NOTE...

*When Mod.1367 is embodied, a spark quench diode is fitted across relay No. 159 solenoid to protect the nosewheel steering switch contacts. (Fig.6).*

#### Override switch

26. Mod.1988 introduces a single-pole switch (Ref.No. 5CW/6429) as an override control for micro switch NSA, in the event of a micro switch failure. The override switch, labelled NORMAL-EMERGENCY, is fitted with a guard and is mounted on the side of panel 3P.

Selection of the switch to EMERGENCY will short out contacts 2-1 of micro switch NSA to enable the nose wheel steering stop valve to be energised.

#### Drum switch operation

27. The nosewheel steering drum switch, Type C1220Y Mk.107, is located on the aft face of the rear pressure bulkhead. The switch is attached to a bracket which permits both the switch body and spindle to be rotated. The body is connected by a suitable rod to the rudder push-pull control tubes, and the spindle is moved by a follow-up rod connected to the nose-wheel.

28. Movement of the rudder pedals will cause the drum switch body to move in either direction energising the appropriate steering valve solenoid in the nose-wheel selector unit. As the nose-wheel turns, the follow-up rod will rotate the drum switch spindle to follow up the switch body, causing the selector valve to be de-energised. This action will give the correct amount of nose-wheel turn in proportion to rudder pedal movement.

### ALIGHTING GEAR INDICATION

29. The position of all wheel units is shown by an indicator, Type D, fitted to the pilots' centre instrument panel. The indicator, equipped with a day/night screen, consists of six lamps, three red, and three green, the operation of which is described in the following paras. A duplicate set of green lamps can be brought into use by operating the switch on the indicator front cover. Supply is via fuse 619 (3P).

30. The indication should be interpreted as follows:-

- (1) Three green lights - all wheels locked down.
- (2) Three red lights - all wheels unlocked.

- (3) No lights - all wheels retracted and locked up.

31. Circuit conditions for all wheels locked down are shown in Fig.3. The supply to the green lamps is fed from the fuse via the 5-6 contacts of micro switches NU↓, PU↓ and SU↓. The other contacts (1 and 2) of these switches are connected to the built-in warning indicator of the air speed indicator.

32. When the alighting gear is selected 'up', the action of the down locks will

release micro-switches NU↑, PU↑ and SU↑, thus extinguishing the green lamps. The red lamps will be switched on via the 4-5 contacts of these switches and the door switches ND↑, PD↑ and SD↑. When the wheel units are fully retracted, the doors will close and the red lamps will be extinguished by the operation of the door switches.

#### WARNING...

*Should fuse 619 fail, the indicator circuits will become inoperative.*

#### A.S.I. warning

33. Fitted as an integral part of the starboard air speed indicator is a pressure switch and magnetic bar. The bar will provide a warning should the speed fall below 160 knots I.A.S. when the alighting gear is retracted.

34. Attached to the magnetic bar is a flag labelled U/C. which obscures part of the upper face of the A.S.I. when the bar is operated. This action communicates a warning to the pilot that the alighting gear is retracted at a low flying speed.

### SERVICING

#### General precautions

35. In view of the dual functioning of the electro-hydraulic valves used in the alighting gear circuits, it is essential that the closest co-operation is maintained between the electrical and airframe tradesmen in order to maintain a high degree of serviceability. This applies to operational tests on the aircraft, and bench testing of the components. Electrical testing is dealt with in the following paragraphs, system testing of the hydraulics in the alighting gear is contained in Sect.3, Chap.6 of this publication. Component testing is contained in A.P.1803D, Vol.1.

#### Functional test

36. At the times laid down in A.P.101B-1902-4, a functional test of the alighting gear should be carried out. The aircraft should be jacked up in accordance with the instructions given in Sect.2, Chap.4, and tests carried out as laid down in Sect.3, Chap.6 of this publication.

37. The pressure switch contained within the starboard air speed indicator should be checked in conjunction with the instru-

ment tradesman. A test should be carried out to ensure that the switch operates at the pressure corresponding to that normally obtained at an A.S.I. reading of 160 knots, decreasing. Details of this test will be found in Sect.7, Chap.2.

#### Alighting gear position indicator

38. This indicator requires little servicing, but to replace a burnt-out lamp, the procedure is as follows:-

- (1) Slacken off the knurled screw in the centre of the indicator front face, and withdraw the complete front face and lampholder assembly.
- (2) Extract the defective lamp by pulling the screwed cap.
- (3) Press the new lamp into its pocket in the lampholder assembly. It may be necessary in extreme cases to carefully reduce the small soldered pip at the side of the lamp.
- (4) Replace the lampholder assembly in the indicator case and secure it with the knurled screw.

#### Continuity test

39. A continuity test of the alighting gear and nose wheel steering circuit wiring, which will also prove the operation of the micro switches, should be carried out at inspection periods when the aircraft is jacked up. The procedure is contained in the following paragraphs.

#### Control circuit testing

40. To line test the alighting gear control circuits, the following procedure should be adopted:-

- (1) Disconnect the supply cables from each of the following control valves, and connect suitable low wattage test lamps across each of the disconnected cables.
  - (a) Nose door valve
  - (b) Nose wheel unit valve
  - (c) Nose wheel selector valves
  - (d) Nose wheel stop valve
  - (e) Port main wheel unit valve

- (f) Port main wheel door valve
  - (g) Port main wheel down lock release valve
  - (h) Starboard main wheel unit valve
  - (i) Starboard main wheel door valve
  - (j) Starboard main wheel down lock release valve
- (2) Remove the following micro switches from their attachment points, leaving the cables connected, and secure the micro switch plungers in the operated position.
- (a) PND ↓ , SND ↓ and NU ↓ switches in the nose wheel bay
  - (b) Both PD ↓ and PU ↓ switches in the port main wheel bay
  - (c) Both SD ↓ and SU ↓ switches in the starboard main wheel bay
  - (d) The PBP and SBP switches at each leg.
- (3) Ensure that the alighting gear emergency air lever micro switch on the starboard side of the engine control box in the cabin is in the normal position (i.e. depressed).
- (4) Select DOWN on the alighting gear selector switch. The following test lamps should light:-
- (a) Nose wheel down door valve
  - (b) Nose wheel unit down valve (controlled by PND ↓ and SND ↓ switches)
  - (c) Port wheel down door valve
  - (d) Port wheel unit down valve (controlled by switch PD ↓ ).
  - (e) Starboard wheel down door valve.
- (f) Starboard wheel unit down valve (controlled by switch SD ↓ ).
- (5) Depress the UP button of the alighting gear selector switch. Note that both PBP and SBP micro switches must be depressed before the up button will operate.
- (6) With the up button depressed, the following lamps should light.
- (a) Nose unit up valve.
  - (b) Nose door down valve. Note that the test lamp should be extinguished by pressing the ND ↑ switch (port forward only). By depressing the NU ↑ switch the nose door up valve test lamp should light.
  - (c) Port main wheel unit up valve.
  - (d) Port down lock release valve.
  - (e) Port door down valve. Note that the test lamp should be extinguished by pressing the PD ↑ switch (aft only). Depress the PU ↑ switch and the test lamp should be extinguished. Depress the PBT switch and test lamp across the port door up connections should light.
- (7) With the up selector button still depressed, the tests laid down in sub-para. (6) (c) to (e) should be carried out on the starboard main wheel system.
- (8) Select DOWN on the alighting gear selector switch, release micro switch NSA and check the nose wheel steering circuit as follows:-
- (a) Depress the nose wheel steering push-button on the first

pilot's control handle. The test lamp connected to the nosewheel steering stop valve cable should light.

- (b) Keeping the push-button depressed, rotate the drum switch body on the rear pressure bulkhead in an anti-clockwise direction, check that the test lamp across pins B and C on the steering selector valve lights.
  - (c) Rotate the drum switch spindle in an anti-clockwise direction and the test lamp should be extinguished.
  - (d) Repeat tests (b) and (c) rotating clockwise with the test lamp across pins A and C.
- (9) Repeat the tests, outlined in sub-para. (8) using the second pilot's nose wheel steering push-button.

#### Indication circuit testing

41. Continuity tests of the indicator circuits should be carried out as outlined in the following sub-paragraphs:-

- (1) Remove and secure in the operated position, the following micro switches:-

NU ↓    PU ↓    SU ↓

- (2) Check that all green lamps in the alighting gear position indicator are lit.
- (3) Release switch NU ↓ , check that the nose wheel green lamp is extinguished and the red lamp lights.
- (4) Operate the four switches ND ↑ , check that the nose wheel red lamp is extinguished.

- (5) Release switch PU ↓ on the port main unit, check that the port wheel green lamp on the indicator is extinguished and that the red lamp lights.
- (6) Operate the two micro switches PD † and check that the red lamp is extinguished.
- (7) Release switch SU † on the starboard main wheel unit and check that the starboard wheel green lamp on the indicator is extinguished

44. No attempt should be made to remove any item of electrical equipment in the alighting gear system unless the power supply is switched OFF. When it is necessary to remove any of the electrohydraulic valve units, this task should be carried out in conjunction with the airframe tradesman.

#### Alighting gear selector switch

45. No difficulty should be experienced

and the red lamp lights.

- (8) Operate the two micro switches SD † and check that the red lamp is extinguished.

42. At the conclusion of the tests contained in the foregoing paragraphs, refit all the micro switches to their attachment points, and reconnect the disconnected valve cables.

#### Micro switch settings

43. General information for the correct

### REMOVAL AND INSTALLATION

in removing the selector switch. The pilot's centre instrument panel is secured at each side to an attachment bracket on each pilot's flight instrument panel. Access to the rear of the selector switch can be made by unfastening the two studs securing the control panel, and allowing the panel to hinge forward.

#### Alighting gear indicator

46. Removal of the indicator is carried

amount of override on the various types of micro switches is contained in A.P. 4343C, Vol.1, Book 1, Sect.2. Setting details for individual switches on the main and nose wheel legs and doors, are given in Sect.3, Chap.5. It should be noted that during retraction tests, when a micro switch has been changed or disturbed for any reason, cables which are attached to moveable portions of the alighting gear structure should be checked for freedom of movement and any signs of chafing and/or possible trapping.

out in a manner similar to that given in para.45 for the selector switch.

#### Micro switches

47. No removal instructions are considered necessary for the micro switches employed on the alighting gear circuits. Most switches are reasonably accessible, and access panels are provided for those switches contained in the door assemblies.

**TABLE 1**  
**Location of electro-hydraulic valves**

<i>Unit</i>	<i>Location</i>
Nose doors valve	Nose wheel bay - aft bulkhead - port inboard
Nose wheel U/C valve	Nose wheel bay - aft bulkhead - port centre
Nose wheel steering stop valve	Nose wheel bay - aft bulkhead - port outboard
Nose wheel selector valve	Top of nose wheel leg
Port main wheel U/C valve	Port wheel bay - on inboard wall
Port main wheel down lock release valve	Port wheel bay - top of main leg
Port main wheel door valve	Port wheel bay - outboard wall
Starboard main wheel U/C valve	Starboard wheel bay - inboard wall
Starboard main wheel down lock release valve	Starboard wheel bay - top of main leg
Starboard main wheel door valve	Starboard wheel bay - outboard wall

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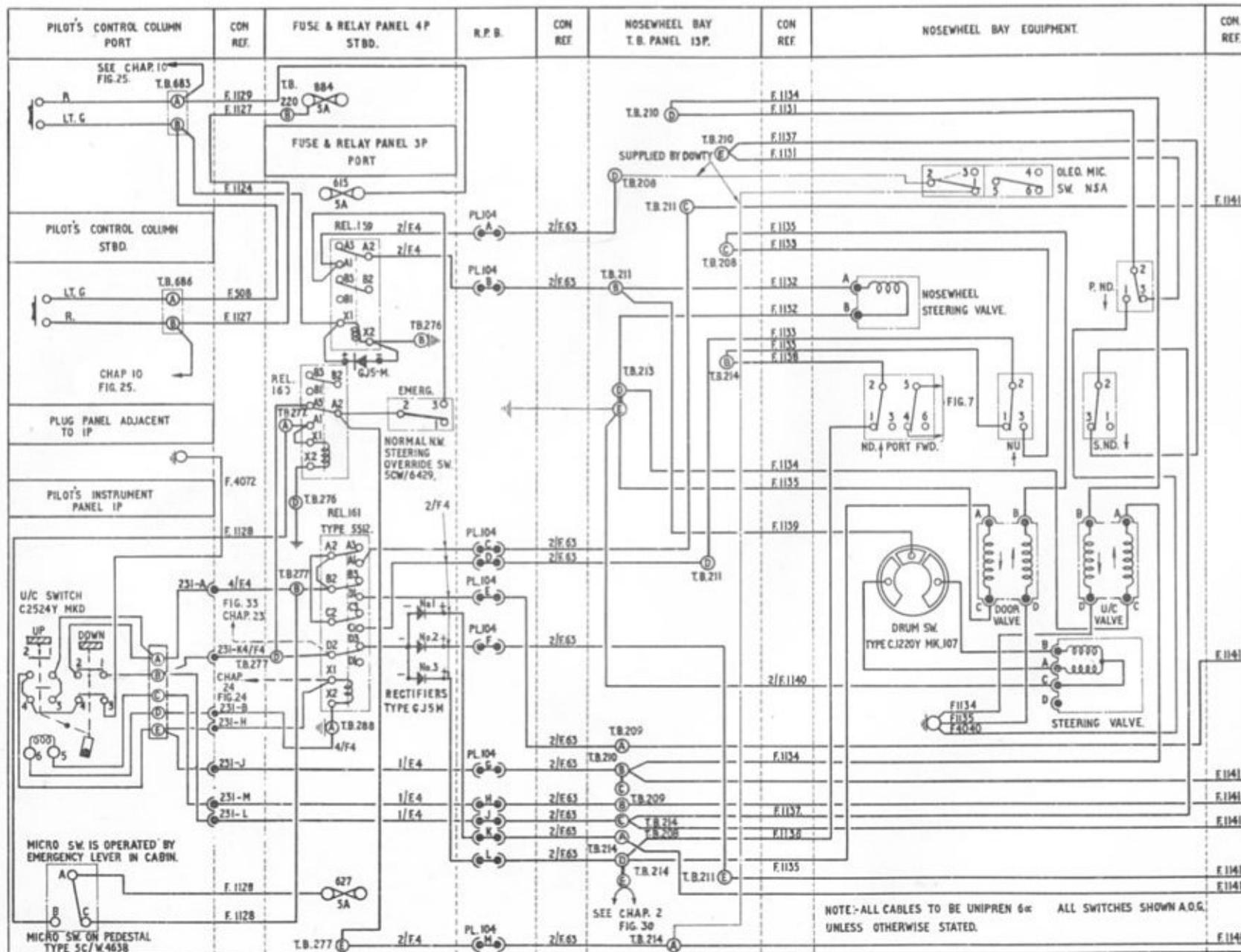


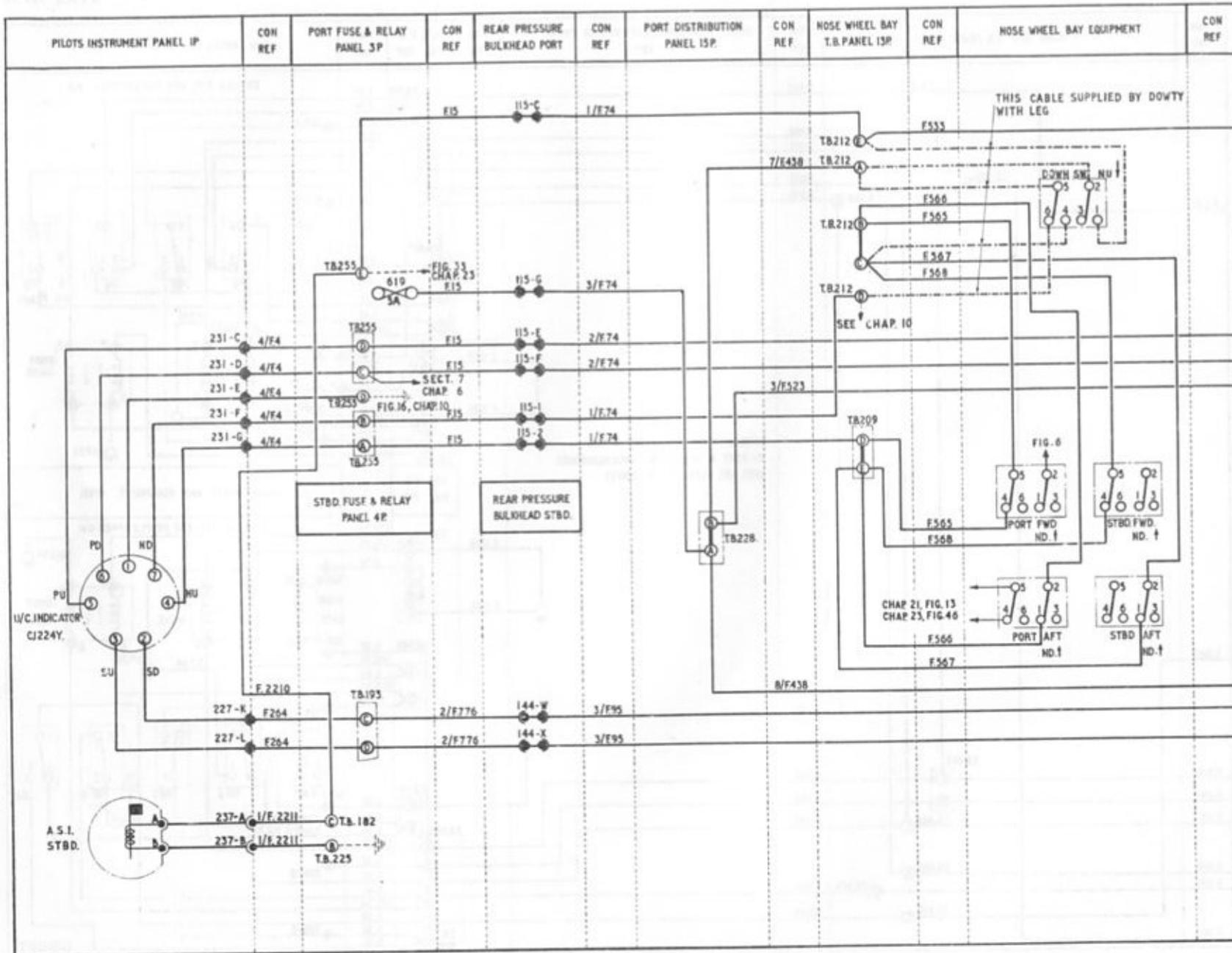
Fig 4 (1) Alighting gear control

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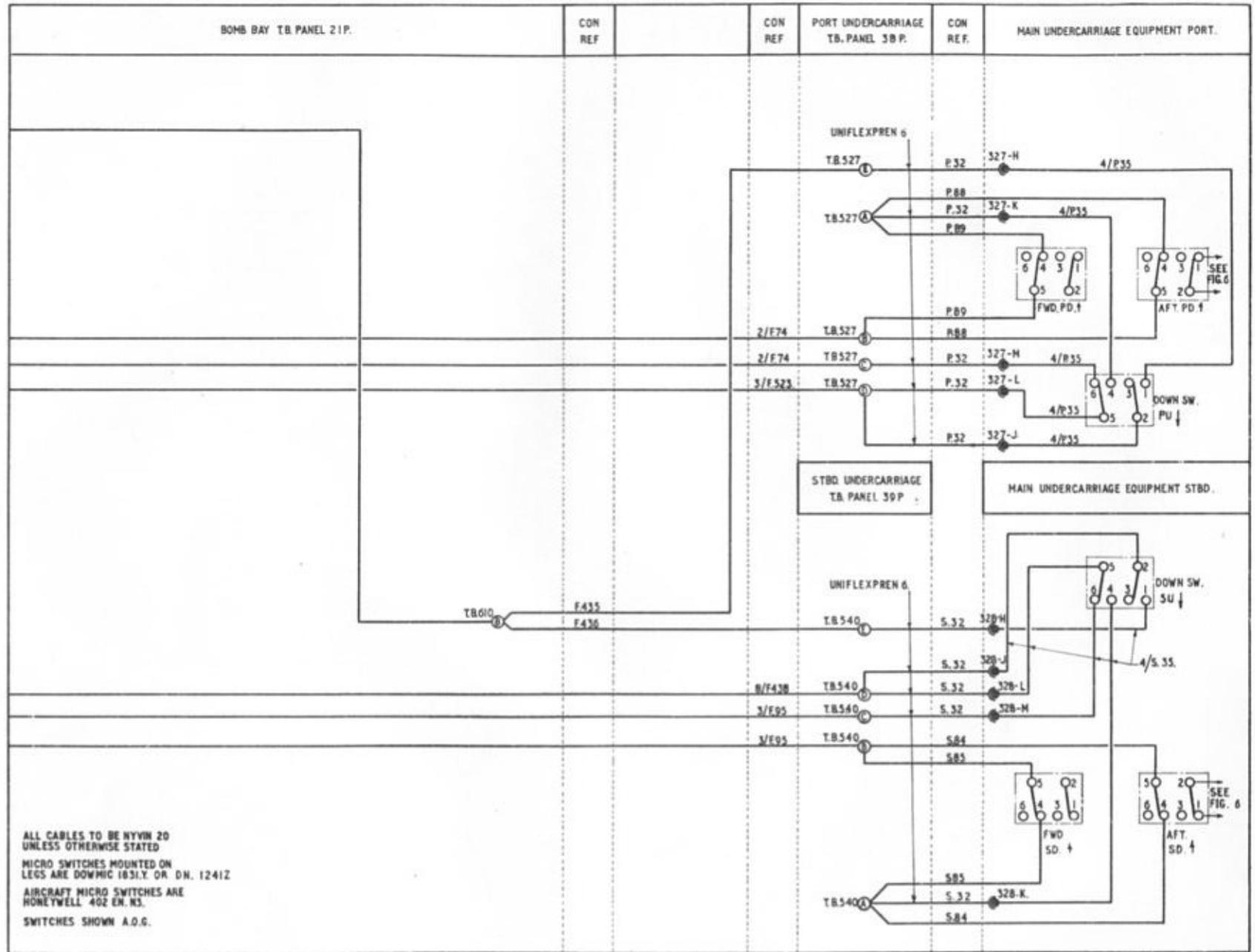
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Fig. 5 (2) Alighting gear indication

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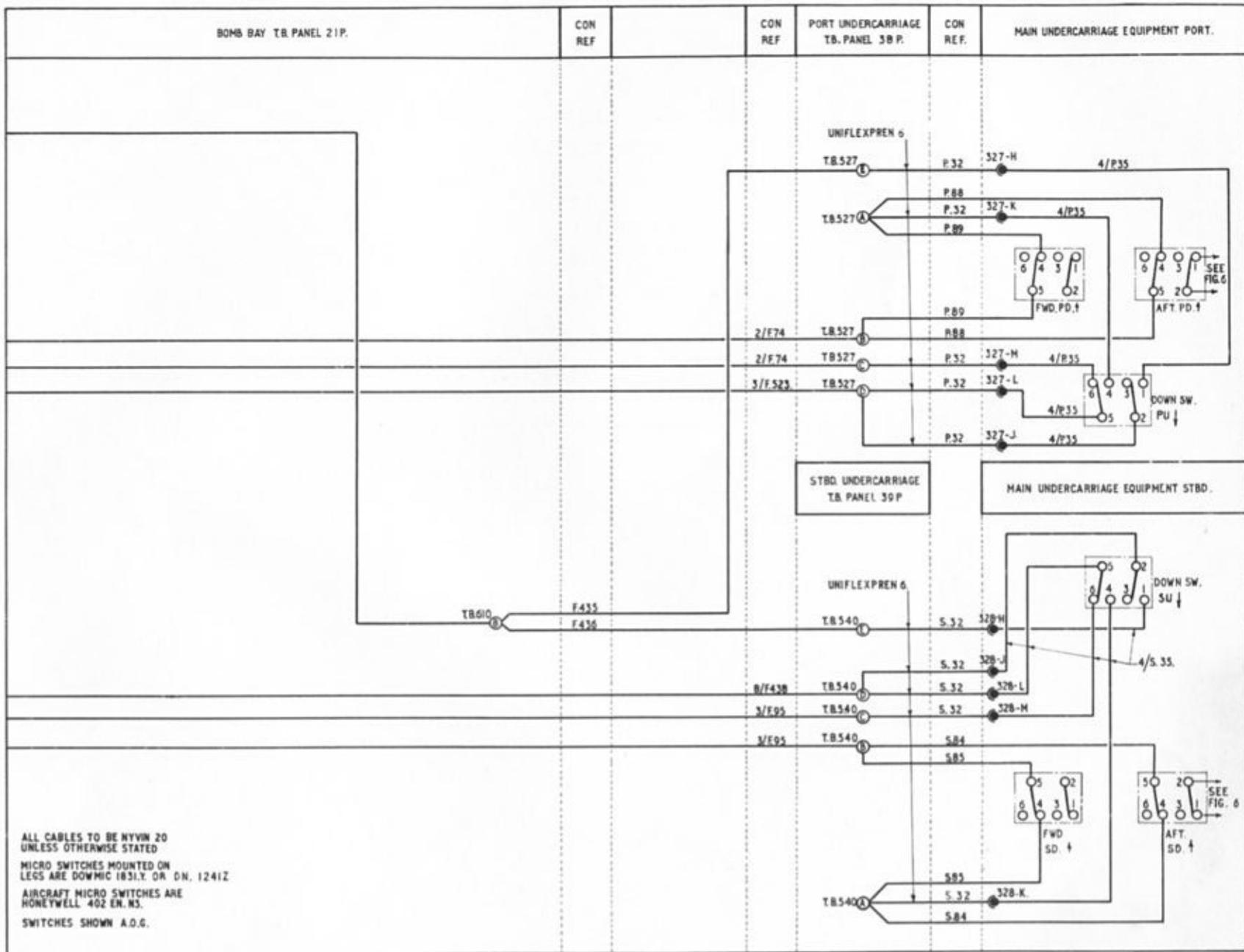


Fig.7(2) Alighting gear indication

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