GROUP D.4

FLAP CONTROL (CODE F)

LIST OF CONTENTS

Introduction

1. This group contains the description and operation, of the flap control circuit installed in this aircraft; together with information on the servicing required to maintain the equipment in an efficient condition. Routeing and theoretical circuit diagrams are included. For a general description of the aircraft electrical system reference should be made to Groups A.1, A.2 and A.3 of this chapter. Detailed information on the standard items of equipment used in the circuit will be found in the Air Publications listed in Table 1.

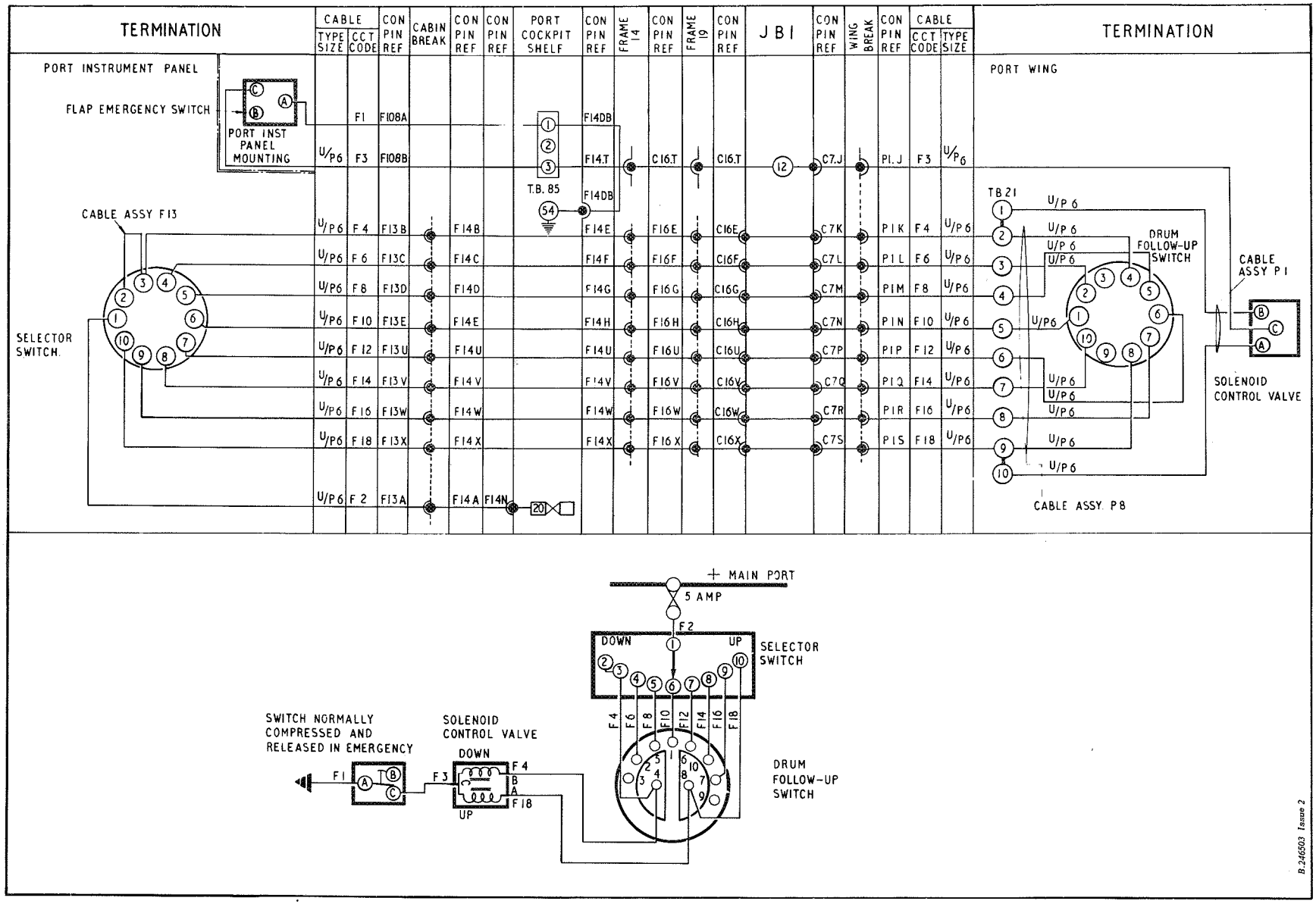

Fig. 1. Flap control (routeing and theoretical)

RESTRICTED

DESCRIPTION

Equipment details

Selector switch

2. The electrical circuit for the hydraulically-operated flaps is controlled by a lever-operated, multi-position selector switch located on the port instrument panel. The switch controls the two solenoids of an electro-hydraulic selector valve, which is mounted on the front spar in the port wheel bay, via a flap-operated, multi-position follow-up drum switch located in the port wing root. The earth return of the selector valve solenoids is taken through the normally closed contacts of a microswitch. In emergency operation of the flaps this microswitch is operated to render the flap selector valve electrically inoperative. In this condition the valve slide adopts a neutral position to prevent loss of hydraulic fluid. The flap position indicator circuit is described in Section 5, Chapter 2, Group 3B.

Operation

Fully UP or DOWN

3. When the selector switch is in either the fully UP or fully DOWN positions, the drum switch is ineffective except that terminals 4 and 8 are used to connect the positive lead from the fuse via the selector switch to the solenoid control valve. This arrangement allows the flaps to be driven to the fully UP or fully DOWN position without the intervention of the drum follow-up switching.

Intermediate positions

4. The drum switch is driven by the movement of the flaps. When any position between fully UP and fully DOWN is selected, the solenoid control valve receives the positive supply via one or other of the drum switch contacts. The contact first effective will be determined by the position of the flap immediately before the selector switch was moved. In circuit diagram *(fig.1)* the selector switch is shown as set to the intermediate position corresponding to a flap demand of 37½ deg. down. Terminal 6 of the selector switch is permanently connected to terminal 1 of the drum switch. In the illustration, terminal 1 of the drum switch is shown clear of the drum switch contact arcs; this represents a flap position of 37½ deg. down having been achieved. Movement of the selector switch to any new intermediate position will connect the positive supply to the UP or DOWN windings of the solenoid control valve via one of the drum switch terminals 2, 5, or 6, 10, 7. It can be seen that the resulting motion of the flaps will drive the drum switch until the required flap position is attained. At this point the drum switch contact arcs will have rotated clear of the contact carrying the positive supply. The supply to the solenoid will be discontinued and the flap and drum switch will come to rest in the new position.

Emergency operation

5. In the event of hydraulic failure, the flaps may be lowered by operation of the flap emergency control. This action introduces high pressure air into the flap system. To prevent excessive loss of hydraulic fluid the flap control valve solenoids are rendered ineffective by the action of a microswitch which is operated by the flap air release valve. This microswitch is normally closed to complete the earth

TABLE 1

Equipment type and Air Publication reference

Equipment	Air Publications
◀ Lever switch, Type C.1223Y, Mk.15N *(Mod.1194)* or C.1223Y, Mk.27 *(Mod.1352)*	A.P.4343C, Vol.1, Book 1, Sect.1 ▶
Drum switch, Type C.1220Y, Mk.111	A.P.113D - 1209 - 1
Control valve, Type 08817Y.AO5	A.P.1803D, Vol.1, Book 3, Sect.8

return of the control valve solenoids. When opened by the emergency control; the microswitch isolates both solenoids electrically and the control valve slide moves to a neutral position blanking off both ports.

SERVICING

General

6. For general servicing of the aircraft electrical system, reference should be made to Group A.1 of this chapter. Apart from keeping all the components clean and carrying out the normal routine tests of security and serviceability, the only servicing necessary is the electrical testing of the electro-hydraulic selector valve as described in the appropriate Air Publication listed in Table 1 of this group. The method of adjusting the linkage between the flaps and the drum switch is described in Section 3, Chapter 4 of this volume.

REMOVAL AND ASSEMBLY

7. Once access has been obtained, the removal and assembly of the components forming the flap control circuit, should present no difficulty. The location and access to all the components is indicated in Group A.3 of this chapter.