

## GROUP D.4 FLAP CONTROL AND POSITION INDICATOR

(CODE F AND FD)

## LIST OF CONTENTS

	Para.		Para.
<i>Equipment employed</i> ... ..	1	<b>Servicing</b>	
<b>Description</b>		<i>General</i> ... ..	7
<i>Flap control</i> ... ..	2	<b>Removal and Assembly</b>	
<i>Indicator</i> ... ..	3	<i>General</i> ... ..	8
<i>Operation</i> ... ..	4		

## LIST OF ILLUSTRATIONS

	Fig.
<i>Flap control and position indicator (routing and theoretical)</i> ... ..	1

**Equipment employed**

1. The major components employed in the flap control circuit are listed below, together with the relevant Air Publications to which reference should be made for a detailed description and the necessary servicing required to maintain them in an efficient condition:—

Lever switch, Dowty, Type C1223Y, Mk. 15N	... ..	<i>A.P.4343C, Vol. 1, Book 1, Sect. 1</i>
Drum switch, Type C1220Y, Mk. III	... ..	<i>A.P.4343C, Vol. 1, Book 1, Sect. 2</i>
Selector valve, Dowty, Type 08817Y.A05	... ..	<i>A.P.1803D, Vol. 1, Book 3, Sect. 8</i>
Flap position indicator, Smiths, Type 473FL } Desynn transmitter, Type 132FL }	... ..	<i>A.P.1275A, Vol. 1, Sect. 16</i>
Micro-switch, Dowty, Type 1A ( <i>flap emergency valve</i> )	... ..	<i>A.P.4343C, Vol. 1, Book 1, Sect. 2</i>

**DESCRIPTION****Flap control**

2. The electrical control circuit for the hydraulically-operated flaps consists of a lever operated multi-position selector switch located on the port instrument panel in the cabin. This switch controls an electro-hydraulic selector valve, which is mounted on the front spar in the port wheel bay, via a multi-position follow-up drum switch located in the port wing root.

**Indicator**

3. The position of the flaps is shown on a Desynn indicator, which is situated on the port side of the centre instrument panel and operated by a Desynn transmitter located in the port wheel bay and linked with the drum switch and flap interconnecting levers.



**Operation**

4. To understand the operation of the flap control circuit it must be noted that the drum switch is not in circuit to control the flap electro-hydraulic selector valve when the selector switch is in either the fully UP or fully DOWN positions. In these positions the current is conducted from the fuse and through the selector switch to the appropriate solenoid of the selector valve via common terminals on the drum switch. This arrangement is to ensure that the flaps are held in the up or down position by hydraulic pressure. The action of the drum switch in all intermediate positions is to direct current from the selector switch to either the UP or DOWN solenoids of the selector valve, according to the position of the centre spindle at the time of operation and to break the circuit when the selected position is attained. The drum switch spindle is rotated to make and break the contacts, by a mechanical linkage from the flaps, and the flaps are thus raised or lowered in a series of steps corresponding to the position of the selector switch.

5. The circuit diagram (*fig. 1*) is drawn in the intermediate position, corresponding to that found when the flaps are  $37\frac{1}{2}$  deg. down. It will be seen that contact 6 of the selector switch is made to feed contact 1

of the drum switch, but as the flaps have attained their selected position the contact arcs on the drum switch have rotated until contact 1 has been lifted clear of the cam, thus breaking the circuit to the flap selector valve. If the selector switch is moved either up or down in its gate it will make contacts 5, 4, 3 and 2 or 7, 8, 9 and 10, in turn, depending on the direction in which it is moved. Should it be moved up to raise the flaps, contact 7 will be made first and feed contact 6 of the drum switch, which is in contact with the contact arc feeding terminal 8 of the unit. The current will now be conducted from the fuse, through the selector switch and drum switch to the UP solenoid of the flap selector valve. When this solenoid is energized, it allows the hydraulic pressure to move the slide within the valve in such a direction as to supply hydraulic pressure to the flap jacks and raise the flaps. As the flaps move up, the drum switch spindle and its contact arcs are rotated by the mechanical linkage, until contact 6 is lifted clear of the contact arc by the cam to break the circuit and de-energize the UP solenoid of the selector valve. The valve will cut off the hydraulic pressure to the flap jacks, which will thus be stopped at the selected position. A similar sequence of operations occurs at all intermediate positions. For a full description of the flap hydraulic system, reference should be made to Sect. 3, Chap. 6.

6. For a full description of the Desynn flap position indicator, together with the principle of operation, reference should be made to the relevant Air Publications (*listed in Para. 1*).

**SERVICING****General**

7. For general servicing of the electrical system as a whole, reference should be made to Group A.1. Apart from keeping all the components clean and carrying out the normal routine tests of security and serviceability, the only other servicing necessary is the electrical test of the electro-hydraulic selector valve as described in the relevant Air Publications (*listed in para. 1*). The method of adjusting the linkage between the flaps, together with the drum switch is contained in Sect. 3, Chap. 4.

**REMOVAL AND ASSEMBLY****General**

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



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