GROUP D4 FLAP CONTROL AND POSITION INDICATOR (CODE F AND FD)

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ILLUSTRATION

Introduction

1. The electrical circuits of the flap control and position indicator are described in this group, together with the method of operation and the necessary servicing information required to maintain the equipment in an efficient condition. A routing and theoretical diagram of the circuits is also included. For detailed information on the standard components used, reference should be made to the appropriate volumes of A.P.4343 series, while a general description of the electrical system of the aircraft as a whole, including system wiring details, referencing of components and general servicing will be found in Group A1 of this chapter. The removal of the major electrical equipment is described in Group A2, and the location, including the means of access, in Group A3 also of this chapter.

DESCRIPTION

FLAP CONTROL AND POSITION INDICATOR

2. The electrical control circuit for the hydraulically-operated flaps consists of a Type C.1223Y, Mk. 15 lever-operated multi-position selector switch located on the port instrument panel in the cockpit. This switch controls an electro-hydraulic selector valve, which is mounted on the front spar in the port wheel bay, via a Type C.1220Y, Mk. 111 multi-position follow-up drum switch located in the port wing root. The position of the flaps is shown on a 473FL Desynn indicator, which is situated on the port side of the centre instrument panel and operated by a Type C Desynn transmitter located in the port wheel bay and linked with the drum switch and flap interconnecting levers.

Operation

3. 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.

4. The theoretical circuit (*fig.* 1) is drawn in the intermediate position, corresponding to the conditions found when the flaps are 37½ 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 by 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 of this volume.

5. For a full description of the Desynn flap position indicator, together with the principle of operation, reference should be made to A.P.1275A, Vol. 1.

SERVICING

6. For general servicing of the electrical system as a whole, reference should be made to Group A1 of this chapter. 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 A.P.1803D, Vol. 1. The standard routine serviceability tests, which should be applied to the Desynn indicator and transmitter, will be found in the appropriate chapters of A.P.1275A, Vol. 1, while the method of adjusting the linkage between the flaps and the Desynn transmitter, together with the drum switch, is contained in Sect. 3, Chap. 4.

REMOVAL AND ASSEMBLY

7. Once access has been obtained, the removal of the components forming the flap control and position indicator circuits should present no unusual difficulties. The location and access to all the components is indicated in Group A3 of this chapter.

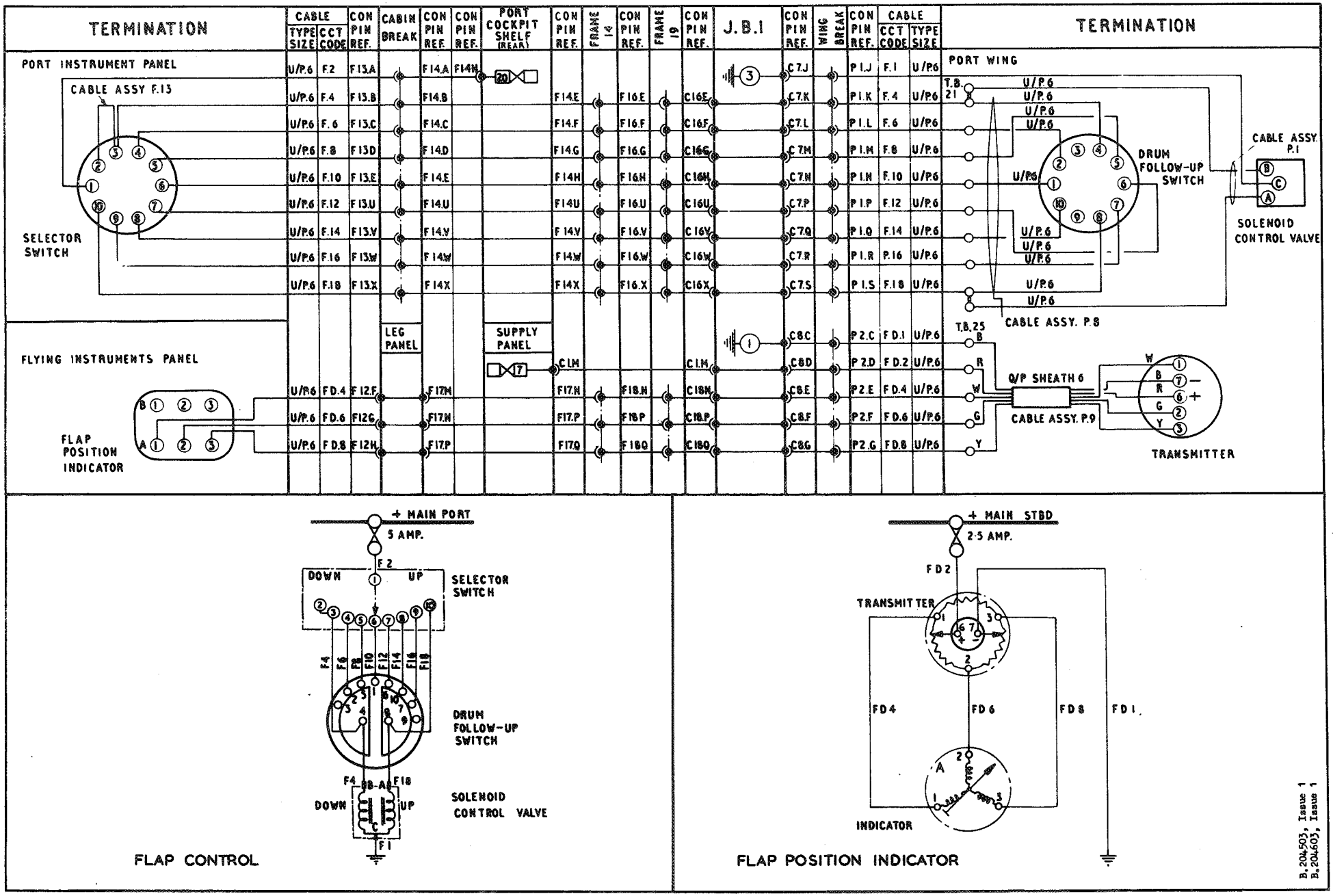

FIG. 1. FLAP CONTROL AND POSITION INDICATOR

(A.L.11, Nov., 54)

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