

GROUP D.7

ALIGHTING GEAR CONTROL (CODE UC)

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Equipment employed

1. The major components employed in the alighting gear control circuit are quoted below, together with the appropriate Air Publications to which reference

should be made for a detailed description and the necessary servicing required to maintain them in an efficient condition.

- Type C.2524Y, twin interlock push switch A.P.4343C, Vol.1, Sect.1, Chap.26.
- Type C.5709Y, Mk.E control valve A.P.1803D, Vol.1, Book 3, Sect.8, Chap.12.
- Micro switch, Dowty, Type C.1831-Y, Mk.2 A.P.4343C, Vol.1, Sect.1, Chap.25.

DESCRIPTION

Alighting gear control

2. The alighting gear is retracted and extended electro-hydraulically as described in Section 3, Chapter 6 of this volume and is also provided with an electrical position indicator, together with a warning lamp, as explained in Group D.8 of this chapter. A twin interlock push-switch unit, situated on the port instrument panel, is used to energize the up and down solenoids of an electro-hydraulic control valve, mounted on the front spar in the starboard wheel bay. This valve controls the fluid to the jacks, which retract and extend the alighting gear. The upper push-switch of the interlock switch unit is used to retract the alighting gear and this push-switch incorporates a solenoid safety lock, which is controlled by compression switches on the undercarriage legs, to prevent involuntary operation of the switch while the aircraft is on the ground. The upper push-switch also controls the supply to the air brake circuit (Group D10 of this chapter) in such a manner that the supply to the air brake control switch is broken until the upper push-switch is depressed to retract the alighting gear, thus rendering it impossible to extend the air brake while the alighting gear is lowered. Should the alighting gear be lowered while the air brake is extended, this interconnection will immediately disconnect the supply to the air brake control switch and thus retract the air brake. This interconnection is to prevent damage to the air brake due to the limited ground clearance and must not normally be used to retract the air brake. The lower push-switch, which is not provided with a lock or interconnected with any other circuit is used to extend the alighting gear.

Operation

3. The theoretical diagram of the circuit (fig.1) is shown with the aircraft at rest on its alighting gear.

From the position of the UP and DOWN push-switches of the control switch unit, it will be seen that the DOWN switch is made to energize the down solenoid of the electro-hydraulic control valve, thus maintaining pressure in the down side of the hydraulic jacks. Due to the weight of the aircraft on its alighting gear, the compression switch contacts are broken and the solenoid of the UP switch lock is de-energized. Thus, the lock is engaged, thereby preventing the UP switch from being depressed.

4. When the aircraft is airborne, the weight is taken from the alighting gear and the compression switch contacts are made to supply the solenoid of the UP switch lock. The solenoid is thus energized and releases the lock, which allows the UP switch to be depressed. Due to the interlock between the switches, depression of the UP switch will automatically release the DOWN switch, which will break circuit and de-energize the down solenoid of the electro-hydraulic control valve. As the UP switch makes contact, the supply to the up solenoid of the valve is completed, thus energizing the solenoid which allows the hydraulic pressure to move the slide within the valve in such a direction as to supply hydraulic pressure to the up side of the hydraulic jacks thereby retracting the alighting gear. On aircraft with Mod. H.428 incorporated, the earth return for the electro-hydraulic control valve is taken through the closed contacts of a micro switch which is operated to open circuit the earth return when the alighting gear emergency lowering control is used. This is to ensure that the valve is de-energized, when emergency action is taken, to prevent the loss of hydraulic oil via the jettison valve in the hydraulic emergency system. With the valve de-energized only the oil in the lower ends of the jacks will be jettisoned thus preventing the possibility of manual reversion of the powered flying controls occurring due to loss of hydraulic oil.

SERVICING

General

5. For general servicing of the electrical system as a whole, reference should be made to Group A of this chapter. The electro-hydraulic selector valve and the interlock push-switch should be kept clean and periodically checked for security and serviceability. For electrical testing of these components reference should be made to the Air Publication quoted in Para.1 of this group.

REMOVAL AND ASSEMBLY

General

6. Once access has been obtained, the removal and assembly of the components forming the alighting gear control circuit, should present no unusual difficulties. The location and access to all the components is indicated in Group A of this chapter.

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