SECTION 8

FLIGHT CONTROLS

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GENERAL

The moveable surfaces on the airplane consist of two ailerons, the right aileron trim tab, two elevators, two elevator trim tabs, the rudder, the rudder trim tab, and the wing flaps. All of these surfaces except the wing flaps are operated manually from the cockpit by means of conventional controls and cable systems. The wing flaps are hydraulically operated.

A. Primary control systems
   a. The two ailerons consist of aluminum alloy frames covered with fabric. Each aileron is hinged to the wing at six points and is counter balanced by weights built into the aileron structure. An adjustable metal trim tab is installed on the right aileron only.
   b. The two elevators consist of aluminum alloy frames covered with fabric. Each elevator is hinged to the horizontal stabilizer at two points and is counter balanced by weights built into the elevator structure. An adjustable trim tab of all metal construction is installed on each elevator.
   c. The rudder consists of an aluminum alloy frame covered with fabric. The rudder is hinged to the vertical stabilizer at two points and is balanced by means of counterweights built into the structure. An adjustable metal trim tab is installed on the trailing edge.

B. Trim tab systems – A trim tab is installed on the right aileron, the rudder and one on each elevator. All trim tabs are of metal construction.
   a. The aileron trim tab on the trailing edge of the right aileron is controlled from the cockpit by a crank on the lower right side of the aft panel of the control pedestal. Clockwise rotation of the control crank corrects a low left wing flight condition and counterclockwise rotation corrects a low right wing condition.
   b. The elevator trim tabs are controlled by a wheel installed on the top left side of the control pedestal. Forward rotation creates nose heavy conditions. Aft rotation tail heavy.
   c. The rudder tab control is a crank located on the lower left side of the aft panel on the control pedestal. Clockwise rotation of the control corrects left yaw conditions and counter clockwise rotation of the crank corrects a yawing condition to the right.

C. Control locks – The airplane does not incorporate an integral control lock system. However, when the airplane is parked removable control locks are normally installed by ground personnel on each surface.

D. Wing Flaps – The wing flaps are of the split trailing edge type extending between the inboard ends of the ailerons. The flaps are hydraulically controlled by means of a 4 way valve located on the hydraulic panel. The handle must be swung out toward the aisle to operate.

The flaps are composed of four sections which function as a single continuous unit. In operation a downward movement of 45 degrees is obtained resulting in an increase in lift of approximately 35% with an increase in parasite drag of approximately 250%.
The indicating system consists of an electrical transmitter connected mechanically to the left inboard flap section. The movement of this section is transmitted to an indicator mounted at the top right hand side of the center instrument panel.

A relief valve incorporated in the flap system prevents full lowering of the wing flaps at airspeeds in excess of 97 knots. A restrictor valve also prevents fast movement of the flaps when retracted.

E. Limitations

Wing flap operation

<table>
<thead>
<tr>
<th>Flaps ¼</th>
<th>135 knots</th>
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<tr>
<td>Flaps ½</td>
<td>99 knots</td>
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<tr>
<td>Flaps ¾ to full</td>
<td>97 knots</td>
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</tbody>
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Rudder trim tab control
Elevator trim tab control wheel